PACKAGING

THE CAHNERS MAGAZINE FOR DECISION-MAKERS/NOVEMBER 1989

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Packagers Study Drug Recalls

Job Survey Paints Revealing Picture

Line Electronics Cut Downtime 80%

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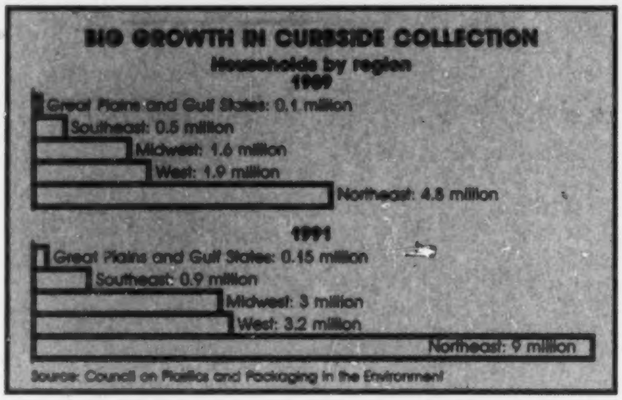
ENVIRONMENTAL NEWS

Curbside Could Double By 1991

COPPE sees big jump in plastics collection

Twenty percent of all U.S. households could be taking part in curbside collection of recyclables by 1991, says a new study released by the Council on Plastics and Packaging in the Environment.



Source: Council on Plastics and Packaging in the Environment

Prepared for COPPE by the consulting firm Resource Integration Systems Ltd., the report foresees a doubling of the present level of participation within the next two years.

The report also projects that curbside collection of rigid plastic containers made of PET, HDPE and other resins could grow from the current level of 1.7 million U.S. households to 16 million between now and '91. As a result, nearly 90,000 tons of all types of rigid plastic containers could be being collected by the end of that year.

In addition, the study estimates residential packaging discards at 1 pound per person per day. Of the 379 pounds of packaging discarded per person per day, only 50 pounds consists of plastic packaging.

COPPE's report also lists suggestions to make plastics collection increasingly attractive:

1. Improve participation rates through aggressive promotion at local, state and federal levels.
2. Reduce costs of collection and handling by including plastics at the start.
3. Improve markets and prices through long-term contracts by processing mixed plastics and by pooling the loads from several small collection programs.
4. Reduce contamination through improved education programs for collection crews and the public in general.

For more information about the activities of COPPE, circle Reader Service No. **427**.

Stretch Labels Aid Recycling

Rutgers praises adhesive-free system

The Center for Plastics Recycling Research at Rutgers has found stretch labels to simplify the recycling of plastic soft-drink bottles.

Thomas Nosker of the CPRR says, "The ideal solution for recycling is to have a package made of easily separable components so that they can be chopped, washed and separated . . . as quickly, cheaply and easily as possible to keep recycling costs low."

Says Nosker, "The stretchable Auto-Sleeve labels do not require glue or solvents to be held to the bottle, and this is an advantage for recycling." He adds, "I think this label is a much-needed thing. It shows that the plastics industry and plastics users are beginning to consider recyclability as a part of the products they are creating."

The Auto-Sleeve label gets its stretchability from a polyethylene blend. During the labeling process, gripper jaws on the labeling machine detach each one-piece label from a roll, pull it down over a bottle and release it. The label fits tightly against the bottle without adhesive.

For more information, circle Reader Service No. **430**.

Recyclers Use Resin Maker's Technology

PET bottles are the raw material

PETe Polymers of Roosevelt, N.Y., and La Mar Plastics, Long Island, are putting post-consumer polyethylene terephthalate bottles to use in innovative recycling operations. Both companies are utilizing technology patented by Fina Oil and Chemical.

La Mar is using a Fina technique to supply vacuum-formed trays, box inserts and formed component parts made of 100 percent recycled soft-drink bottles. The products are priced competitively with similar items made of utility-grade high-impact styrene.

PETe Polymers has become the first commercial user of Finaprene, a rubber modifier, which is used in the impact modification of recycled PET. The resulting copolymer replaces ABS and other resins in selected injection-molding, extrusion and vacuum-forming operations. A new plant in Detroit is expected to begin processing as much as 10 million pounds of the material this fall.

For more information, circle Reader Service No. **429**.

U.S. Leads In Landfilling

Europe and Japan reuse, burn plastics

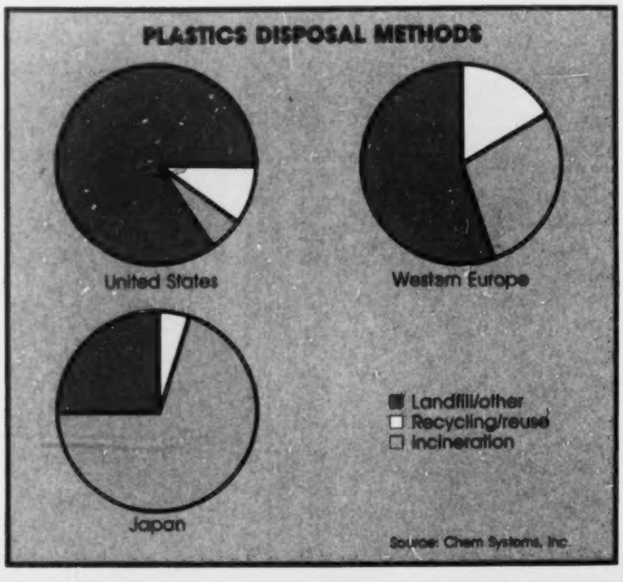
A new study from Chem Systems, Inc., shows the U.S. landfilling far more plastic waste than Western Europe and Japan.

The study, titled "Global Plastics Disposability: Alternate Solutions," concludes that "the United States trails behind the other industrialized nations in utilizing the more practical . . . methods of recycling and incineration."

At present, according to Chem Systems, the U.S. landfills 85 percent of all plastics waste. Western European countries landfill 55 percent and Japan buries 25 percent.

Reliance on landfills has affected interest in plastics that break down. "U.S. consumers believe that degradability is the answer to reducing plastics waste," the report says. "Their influence with legislators has led to laws requiring a ban or tax on materials that are not degradable."

For a copy of the study, circle Reader Service No. **428**.



Source: Chem Systems, Inc.

Survey Paints Portrait of Today's Packaging Pros

Respondents to our exclusive annual study seem concerned, committed and at ease with their jobs

By Greg Erickson Senior Editor

Experienced. Well-educated. Well-paid and willing to say so. Challenged by his job and not the least bit bored with it. A little edgy, perhaps, about constraints imposed by both internal and external forces, yet confident. In essence, that's the packaging professional of today.

That flattering composite profile results from PACKAGING's 1989 Career Survey, an in-depth study of members of the now-combined SPHE and Packaging Institute International. Of the 2,000 questionnaires we mailed, 800 were returned—a better than 25 percent rate of response.

Here are a few of the interesting averages the data allowed us to calculate.

- Average length in years of experience in the packaging field: 14.2.
- Average number of years at the present job: 11.5.
- Percent respondents having some management responsibilities: 81.6.
- Average number of people supervised by those in management: 10.8.
- Average annual income: $55,400.
- Percent of total on-the-job time spent on packaging-related activities: 71.7.
- Percent of respondents who waited more than four years for their most recent promotion: 25.
- Percent that haven't yet been promoted: 18.9.
- Percent listing TV as their most-valued means of relaxing: 15.6.

Are you average? Or are you off on one or the other end of the packaging-career spectrum? Keep reading. You'll find yourself in here somewhere.

RESPONDENTS' PROFILE

Percent

Regions

Northeast	Midwest	South	West
29.1	36.9	21.6	11.9

Sex

Male	Female
89.9	8.6

Age

26-30	31-35	36-40	41-45	46-50	51-55	56-60	61 +
11.7	14.0	14.6	14.8	15.1	10.5	9.6	7.9

Formal Education

H.S. Grad	Attended college	Earned Bachelors degree	Earned Masters	Doctorate/other
3.9	17.7	57.9	16.4	3.3

Annual Income (Thousand $)

<30	30-40	40-50	50-60	60-70	70-80	80-100	>100
6.5	19.5	22.6	17.8	11.5	8.8	5.2	7.8

Years in Packaging Field

<3	3-5	6-10	11-15	16-20	>20
3.2	11.0	22.2	16.4	13.9	33.4

Title

Packaging/Project Engineer	Senior Packaging Engineer	Manager/Director of Packaging	Administration	Other
19.5	18.8	23.2	9.7	26.7

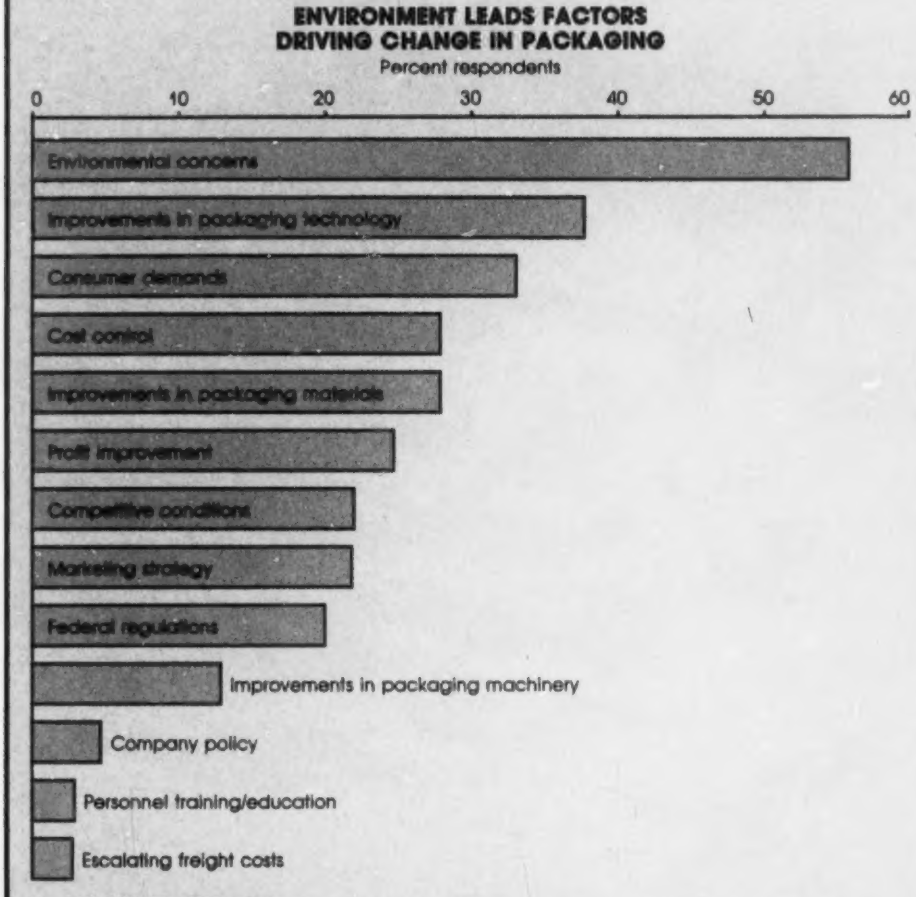
Feelings About Pay

Underpaid	Paid right amount
44.4	53.3

Source: PACKAGING's 1989 Career Survey

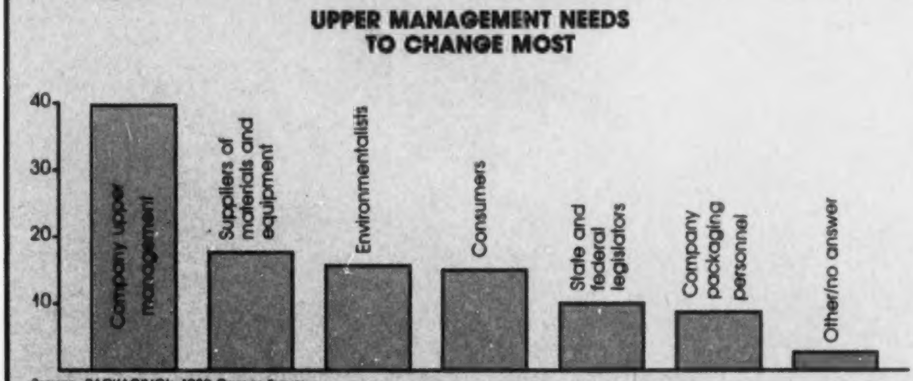
Note: Results may not total 100% due to exclusion of statistically irrelevant responses.

The average packager has been in the field 14 years; in his present job, 11.5



Source: PACKAGING's 1989 Career Survey
Note: Total exceeds 100% due to multiple response

Asked to check the three major factors driving packaging change today, by far the highest percentage of respondents marked "environmental concerns." Technological improvements came in a distant second.



Source: PACKAGING's 1989 Career Survey
Note: Total exceeds 100% due to multiple response

The question: "If packaging is to meet the challenges of the next decade, where do you feel the biggest change in thinking will have to be made?" According to our respondents, upper management needs a new mindset.

You may have noticed that we used the masculine pronoun in the introduction—"his" job. We did that not just because it's easier to read than "his or her" but also because the impact of the female packaging professional on the field, for better or worse, remains small. Less than 9 percent of our respondents are women. They're younger than the men and are, for the most part, relatively inexperienced: Barely half of them have been in packaging more than five years.

Not surprisingly, the average annual income of the female packagers polled is less than that for the men: $41,700 vs. $56,468. Even so, more than 50 percent of the women (as well as more than half the men) say they are paid about the right amount. And 60 percent of the women—compared with only 49 percent of the men—say they were satisfied with the amount of their last raise.

Bachelors abound

We're talking degrees here. (In fact, when it comes to marital status, singles are rare—only 18 percent of the total.) Nearly 60 percent of all our respondents say they earned a B.A. or B.S. in college. More than 16 percent report going on to earn their Masters. Over one-third of our respondents say they received formal packaging-related education in college. Almost two-thirds tell us they have augmented their university work with continuing education and seminars in packaging-specific topics. Nevertheless, 48.5 percent of all respondents say they feel job experience is more important than formal education for a packaging professional.

"Engineer" is a prevalent word in the titles of our respondents. Roughly one-fifth are packaging/project engineers; another fifth are senior packaging engineers.

Approximately 18 percent are managers of packaging. Although only 9.7 percent of our survey subjects label themselves "administration," almost 40 percent of all respondents say they believe administration and management skills to be more important to their job than packaging expertise.

No threat

Despite all the buyouts, mergers and acquisitions that seem to be shrinking the number of corporate players in the field of packaging (as well as others), our respondents seem to feel secure. Only 21 percent of them say they feel threatened by all the consolidation.

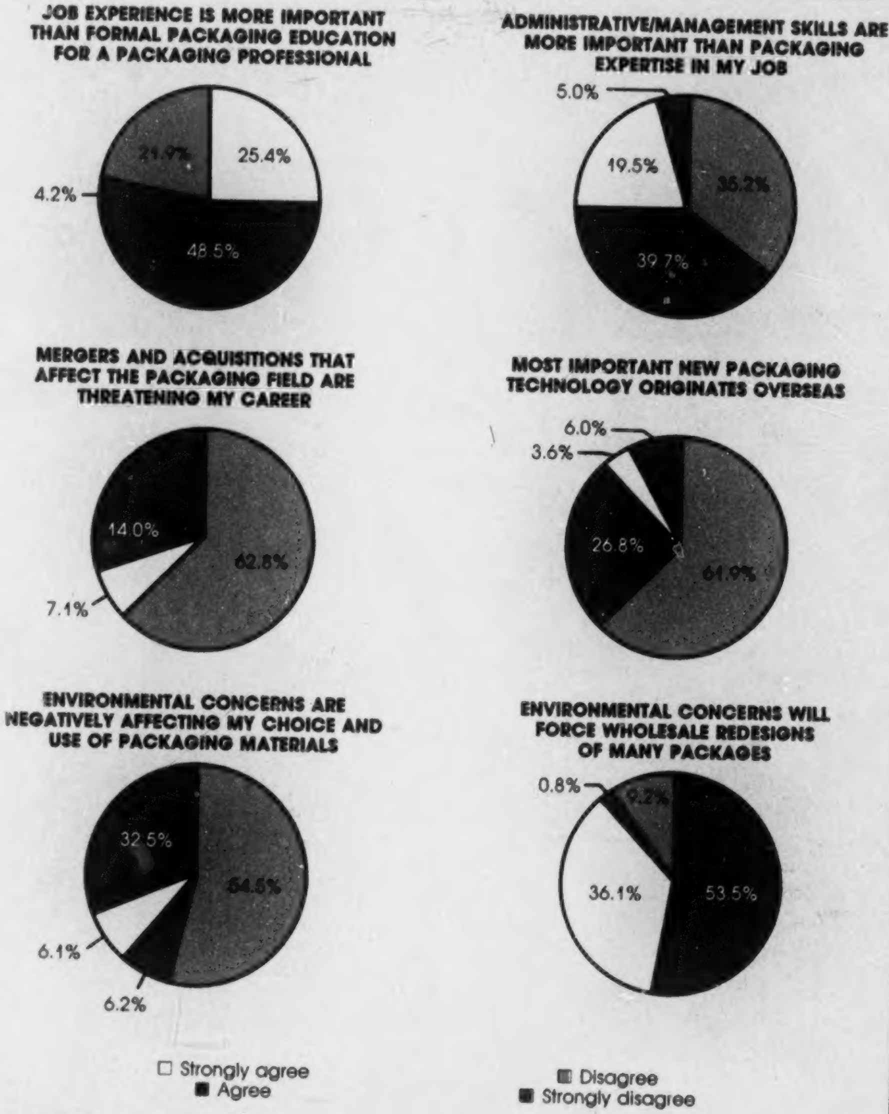
More of a concern if not a threat is the impact of environmental activism. Are environmental concerns already affecting the choice and use of packaging materials? More than 60 percent of our respondents say no. But will those issues eventually force wholesale redesigns of many packages? Almost 90 percent say yes. Moreover, when asked to list factors that will drive future change in the packaging field, close to 60 percent put environmental concerns at the top. Factors including cost control, profit improvement and advances in technology, materials and machinery lag far behind.

In dealing with the environmental impact of packaging and other concerns, packagers responding to our survey say some changes in thinking will be necessary. But interestingly, they do not accuse environmentalists, legislators or consumers of widespread wrongheadedness. Rather, they say, if packaging is to meet the challenges of the next decade, the biggest change in attitude will have to be brought about by company upper management.

In interviews for other stories, our editors occasionally hear comments that the U.S. is falling behind in packaging technology. That appears to be changing for the better. Last year in our survey, only 51 percent of respondents disagreed with that contention. This year, 66 percent disagree.

It's a cliche of the resume-writing pursuit to state a preference for a "challenging" career. Whether they put it on their resumes or not, it looks as though our respondents manage to find such jobs. Across all age groups surveyed, that adjective is by far the one most often used by our subjects to describe their position in packaging.

Maybe because their jobs are so challenging, our respondents seldom call them boring. They are, in this order, more often termed re-



Source: PACKAGING's 1989 Career Survey

A majority of PACKAGING's respondents say that job experience is more important than formal education and management skills are more important than packaging expertise. They feel that mergers and acquisitions pose little threat to their job and that most important packaging technology originates right here. Respondents say environmental concerns do not now negatively affect material selection but will indeed force big changes in packaging.

This year, only 44 percent of our respondents called themselves underpaid

warding, especially by those respondents in their 50s; fun, mostly by the very young and those in their 40s; routine but satisfying, mostly by those in their late 50s; and frustrating.

Talking bennies

Of the benefits not now available to them, which ones would our respondents most like to have? The most widely desired and the percentages of respondents listing them as such are stock options, 14.6; profit sharing, 11.0; company car, 10.0; dental insurance, 7.9; child care, 6.7. Stock options, profit sharing and cars are far more popular among the men; flex time and child care are of much greater interest to women.

The average salary continues to rise—from an average $44,179 in 1987 to $48,577 in 1988 and on to about $7,000 more than that this year. In 1988, about 49 percent of our respondents said they felt underpaid. This year that figure dropped to 44 percent.

In general, it seems, the professionals we surveyed this year think the packaging field is a pretty good place to work. ■

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How would you rate this article? To reply, circle the appropriate number on the reader service card:

Outstanding	447
Above Average	448
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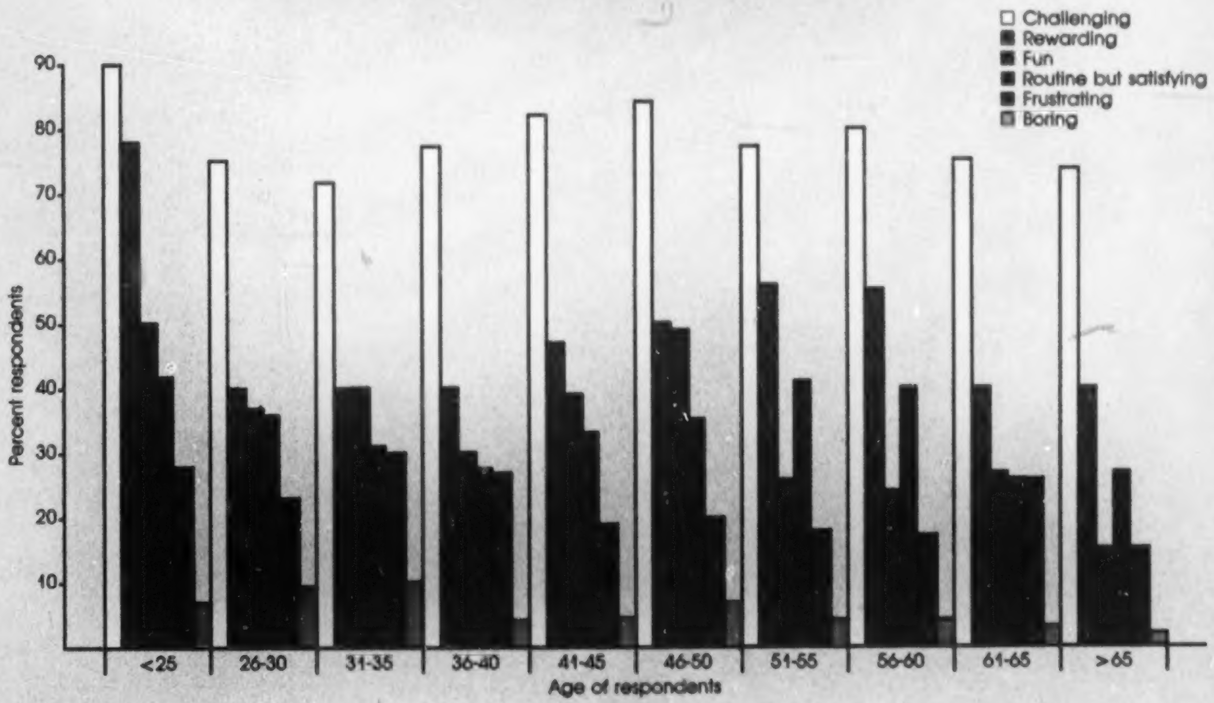
GREG ERICKSON
Senior Editor
"Because we want to know how good a job we at PACKAGING are doing, we ask our Career Survey subjects to rank topics in order of importance to their career and rate our coverage of them. The results are gratifying. Rest assured we'll continue providing such information. We're here, after all, to help make our readers' jobs more productive and enjoyable."

PACKAGING JOBS ARE CHALLENGING, NOT BORING



Source: PACKAGING's 1989 Career Survey

Survey respondents in most age groups report that their positions in packaging are—in this order—challenging, rewarding and fun. They're seldom boring.

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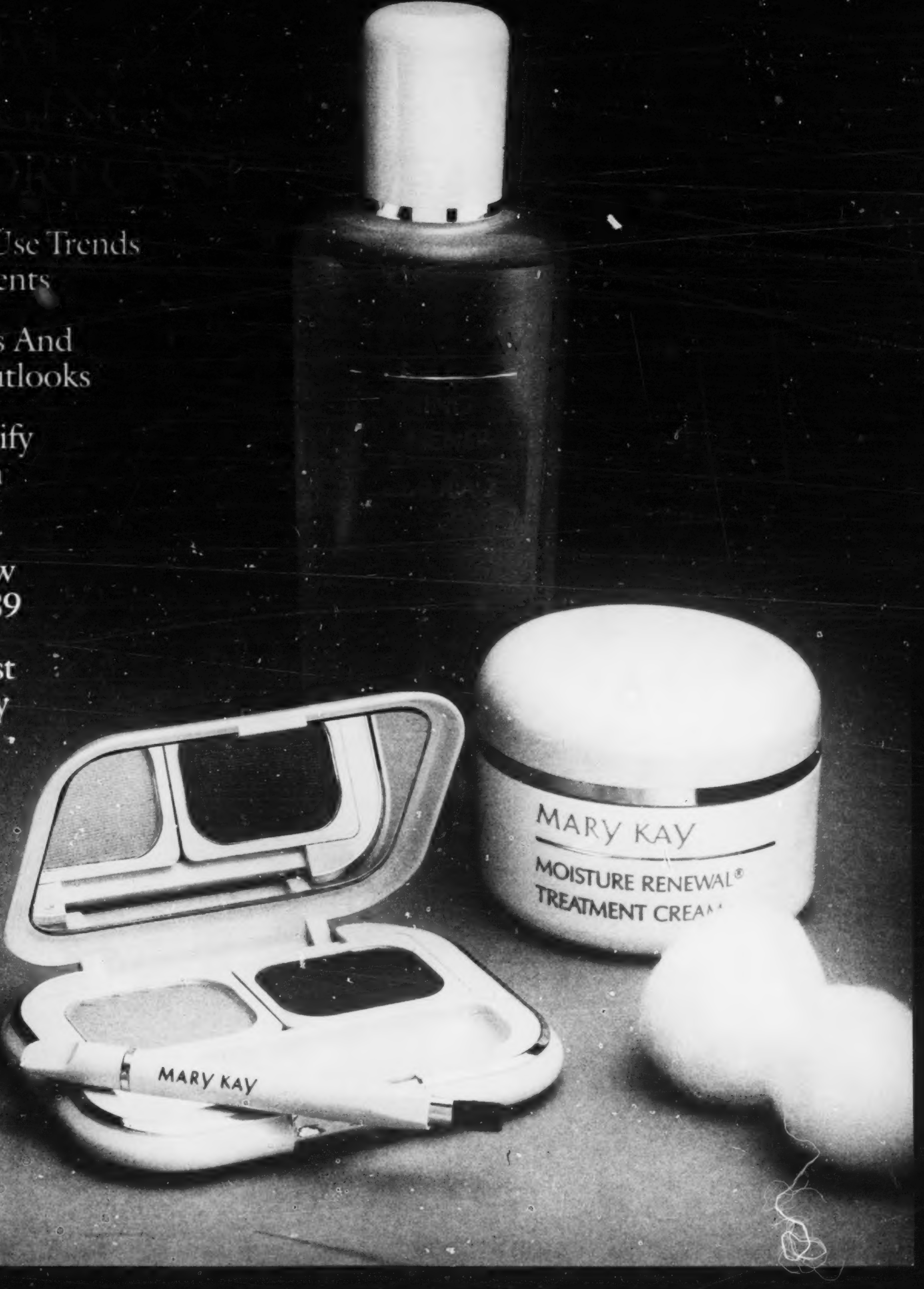
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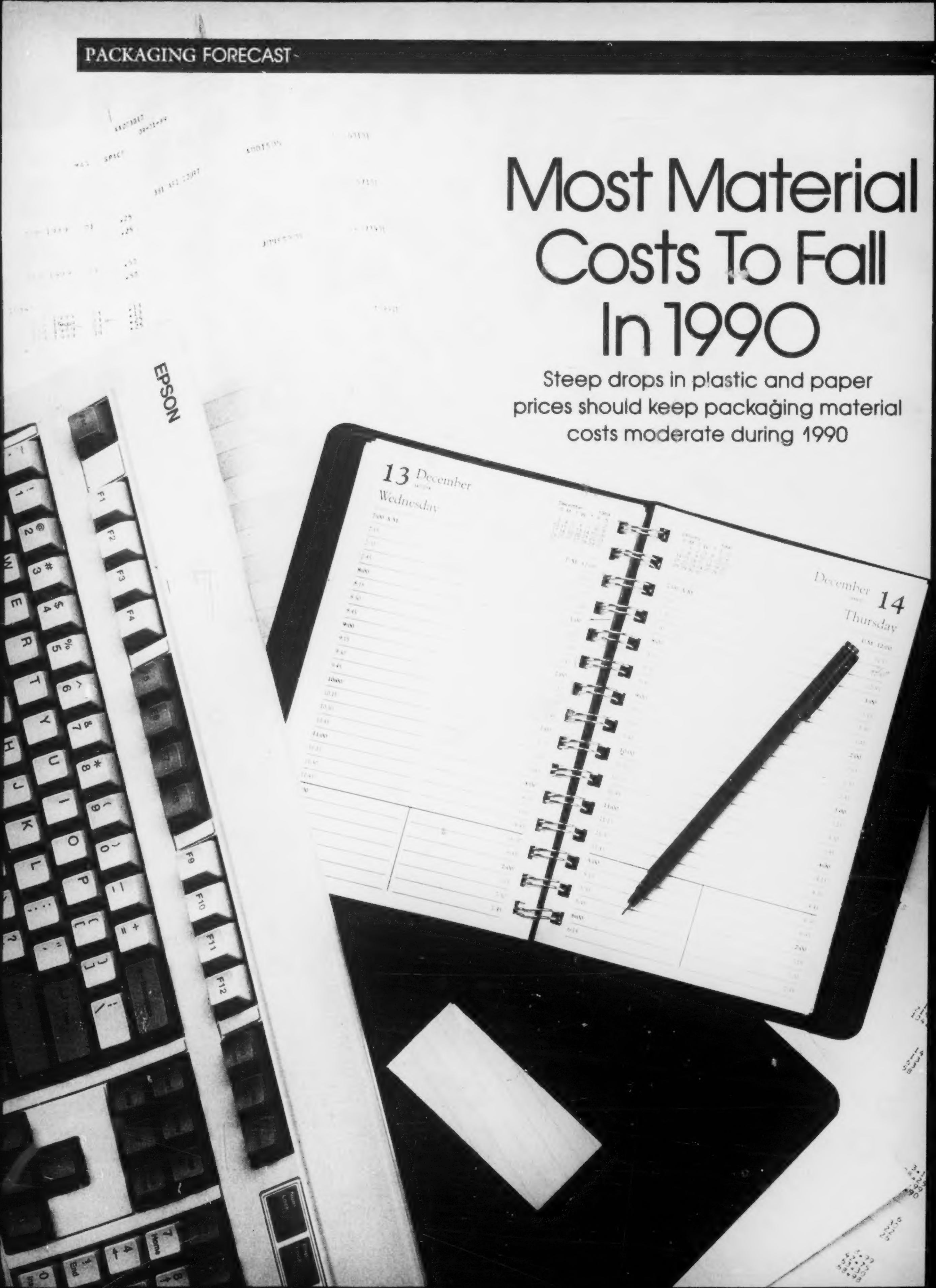
Most Material Costs To Fall In 1990

Steep drops in plastic and paper prices should keep packaging material costs moderate during 1990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For the most part, 1990 should be a good year for packaging.

Despite a mild slowdown in many key sectors of the economy, stability is the term that best characterizes the outlook for the coming year.

For packagers of America's gross national product, the best news is that most industries will begin a new cycle of growth in 1990, while most material and supply costs will remain stable or even decline slightly.

Employing a new and exclusive methodology, PACKAGING's editors forecast that overall spending for packaging materials, containers and supplies will grow 5.5 percent in 1990, to a total of $74.725 billion.

These are among the conclusions reached in compiling PACKAGING's first, in-depth forecast for the packaging field. The purpose of this extensive effort is to give you a detailed basis for your own planning in 1990 and beyond.

The ground-breaking aspects of this forecast should be noted. For the first time anywhere in the field, we detail the value of packaging consumed by nine key industries and forecast the growth in such spending for each through 1991. In addition, we analyze the critical trends affecting packaging in each industry. The result is the first forecast that details the different dynamics and growth rates affecting packaging in the key industries which consume more than 80 percent of all packaging.

We supplement this core of data with projections of the changing costs of the most widely used packaging materials and containers and of the general economic indicators that have the most impact on packaging use.

For these, and as a base for our packaging forecasts, we have relied heavily on the experience, expertise and computer models of Cahners Economics.

James Haughey, Cahners chief economist and v.p.-research and economics, jokes that for the general economy, "we're looking at a pretty boring year; 1990 will look a lot like 1989, though in a reverse pattern, with growth picking up as the year wears on." The result, he says, is that the economy will be in better shape next December than a month from now.

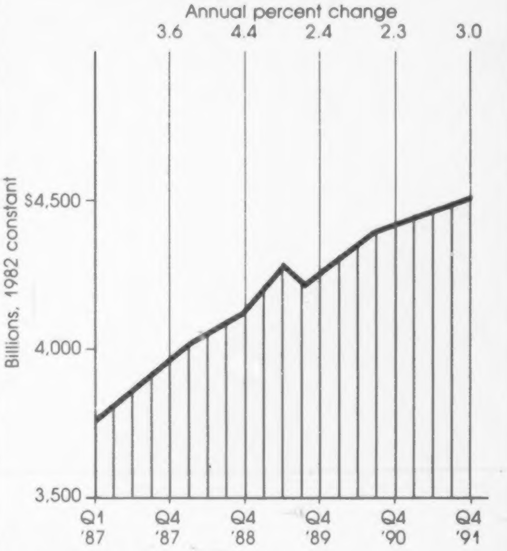
Cahners forecasts for key measures of the general economy reflect this trend. Real gross national product is projected to grow 2.3 percent in 1990, and 3.0 percent in 1991, vs. 2.4 percent in 1989.

Forecasts for real disposable income and consumer spending show slightly more pronounced swings. Real disposable income—that is, personal income after taxes—will grow at a 2.5 percent rate in 1990, following growth of 3.7 percent this year. Growth of real consumer spending will drop to 1.7 percent in 1990 from 2.0 percent in 1989.

Growth in the value of total manufacturing shipments is a key barometer, because its components serve as the base for our packaging forecasts. Following strong current-dollar growth of 9.3 percent in 1988 and 7.2 percent this year, growth will slow to 5.4 percent in 1990 before increasing to 9.2 percent in 1991.

The bottom line for packaging is a slightly slower year in 1990, followed by stronger growth in 1991. The slowdown early in '90 is a good time to closely analyze production capacity and ready new products, Haughey suggests, to take advantage of stronger markets in 1991.

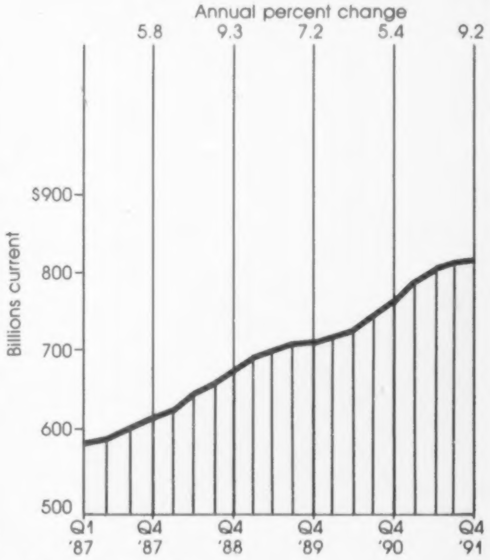
—The Editors



REAL GROSS NATIONAL PRODUCT CONTINUES UPWARD, BUT SLOWLY

Data source: Dept. of Commerce
Forecast source: Cahners Economics

Gross National Product appears unlikely to zoom in the near future, but real growth is still in the offing.



TOTAL MANUFACTURING SHIPMENTS GROWTH TO DIP THEN RISE

Data source: Dept. of Commerce
Forecast source: Cahners Economics

Growth of total manufacturing shipments will slow in '90, then rise strongly in 1991.

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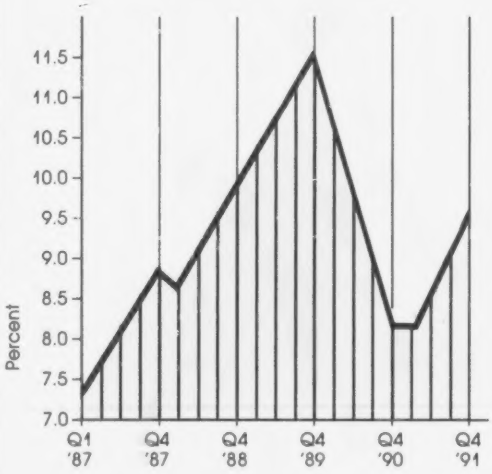
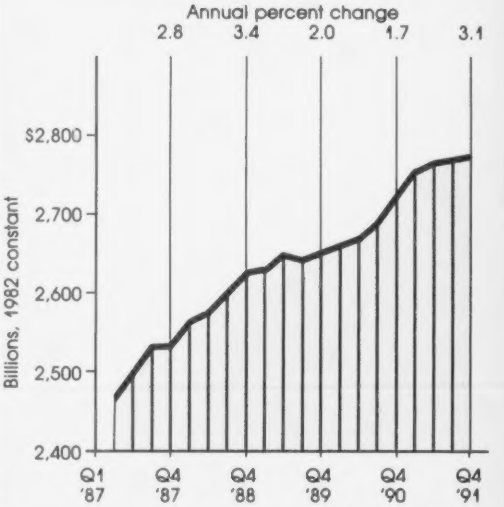
Growth of key consumer spending, confidence measures to slow then rise in 1991



PRIME RATE TO FALL THROUGH 1990, THEN RISE

Data source: Federal Reserve Board
Forecast source: Cahners Economics

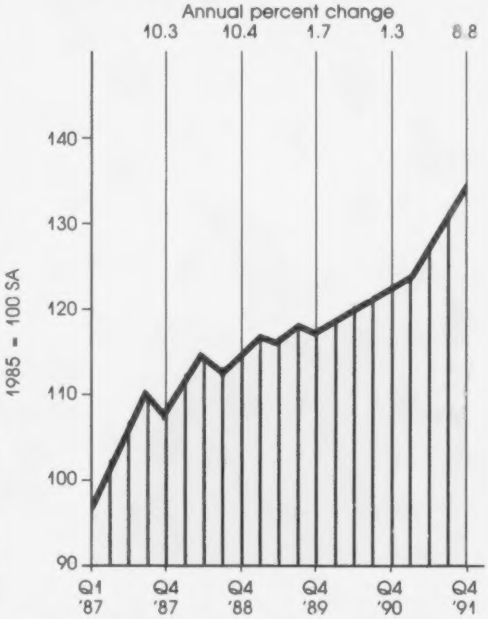
Interest rates, now falling, are likely to continue in that direction through all of 1990, then move up.



PERSONAL CONSUMPTION SEEN RISING THROUGH MID-1990, THEN LEVELING OFF

Date source: Federal Reserve Board Forecast Source: Cahners Economics

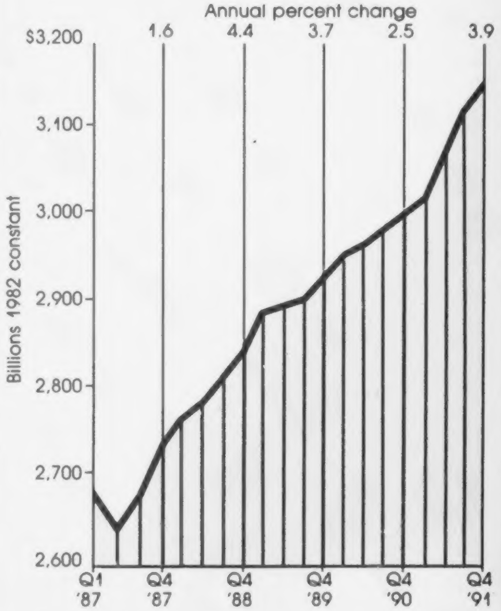
All other indicators point to growth in personal consumption between now and the end of next year.



CONSUMER CONFIDENCE INDEX TAKES AN UPWARD SWING

Data source: The Conference Board
Forecast source: Cahners Economics

Following a leveling-off period mid-1987 to mid-1989 consumer confidence is on its way upward significantly



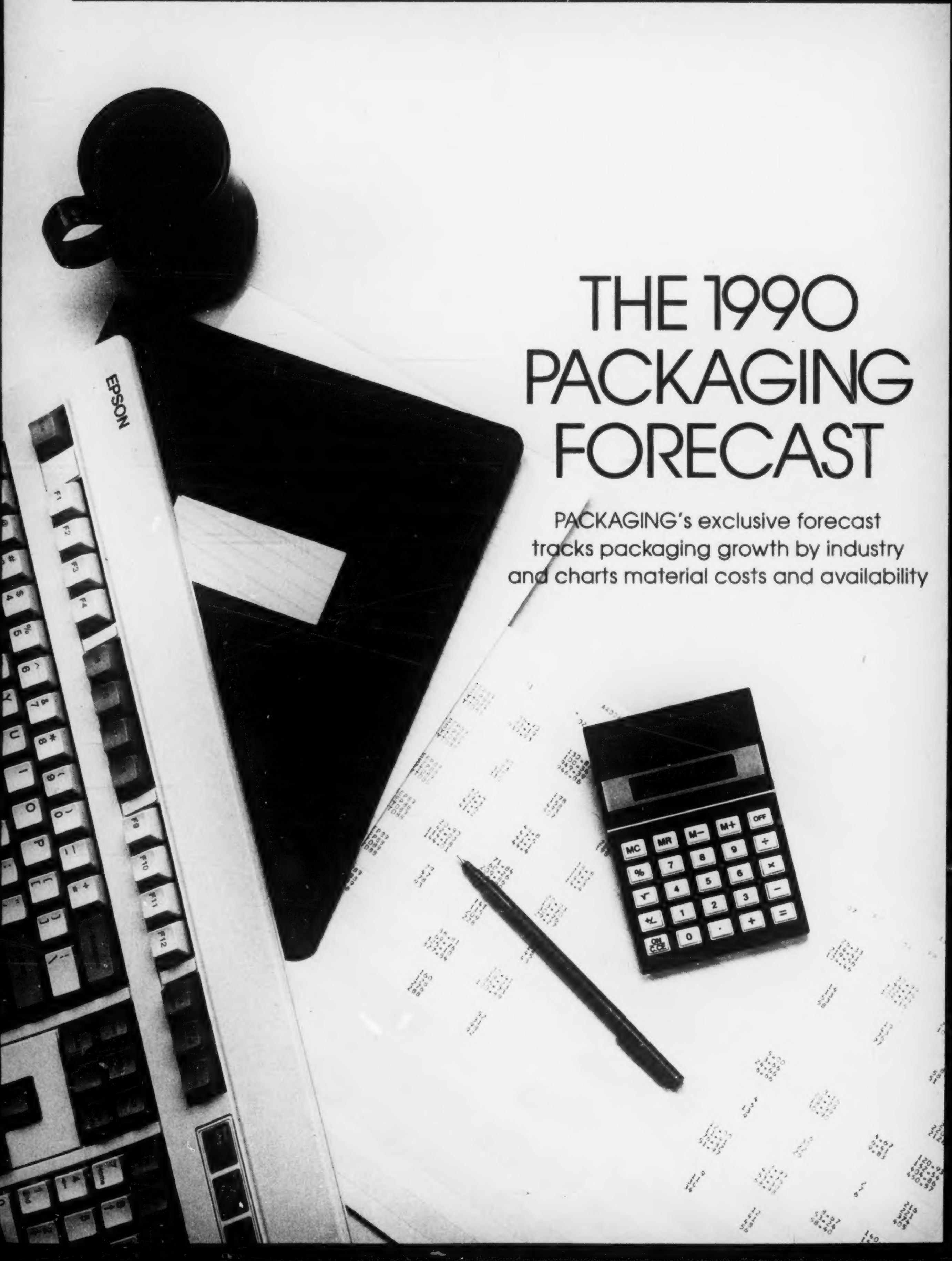
REAL DISPOSABLE PERSONAL INCOME GROWS

Data source: Dept. of Commerce
Forecast source: Cahners Economics

Growth of real disposable income, consumers' income after taxes, will slow, then rise in '91.

THE 1990 PACKAGING FORECAST

PACKAGING's exclusive forecast tracks packaging growth by industry and charts material costs and availability



On the one hand, best-selling crepehanger Ravi Batra says 1990 will mark the start of a seven-year recession. On the other hand, Prudential-Bache Securities' leading optimist Edward Yardeni says we are headed into a long-term global boom. That kind of thing drives pragmatic policymakers to distraction. No wonder President Harry Truman is said to have ordered his aides to find him a money manager who had only one hand.

Economists say they'd give their right arm to know for sure what will happen to the prices of things. They say that because they know they're in no danger of losing a limb.

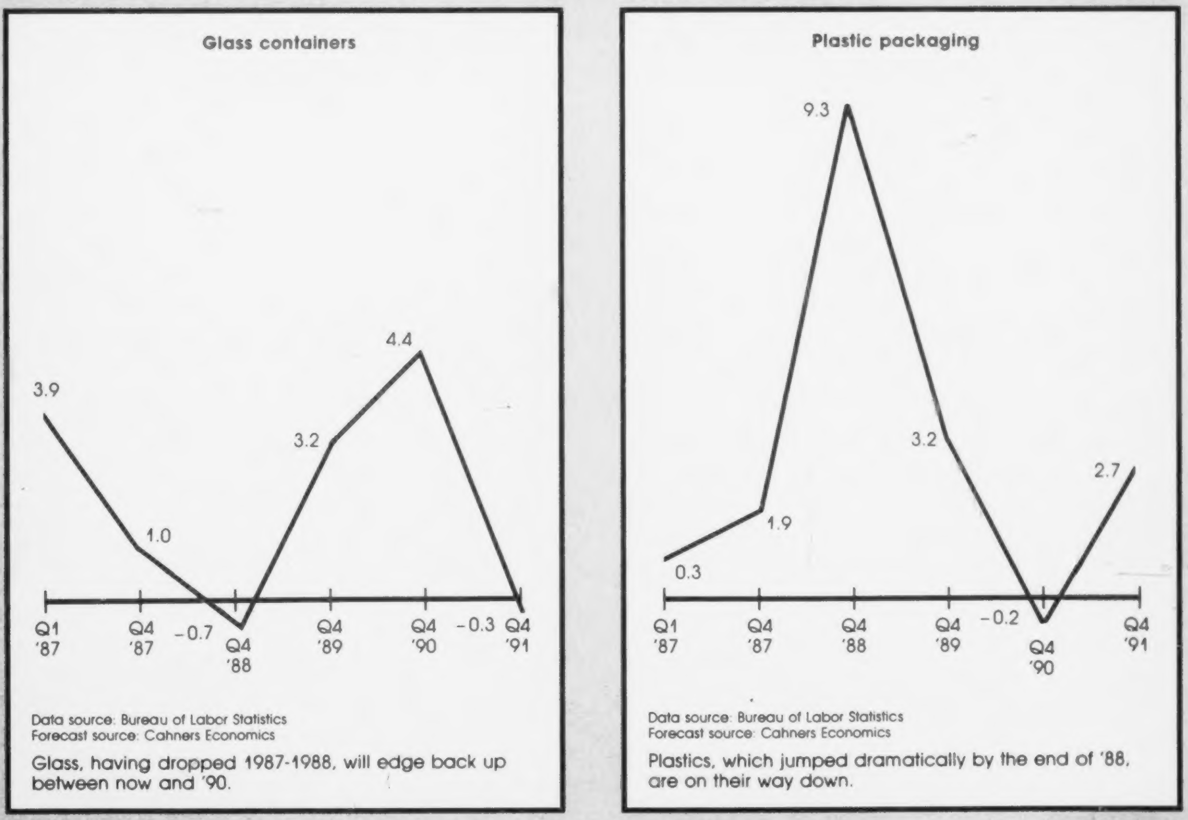
There's no absolute certainty in the pricing predictions you are about to read, but they do seem credible to us . . . at this point. The reason: Manufacturers of packaging materials increased their own spending a while back. That investment boom has led to an inventory glut. Unless demand rises to unexpected heights with unexpected speed over the next 12 months, prices will moderate or even decrease.

The charts representing annual inflation rates for producer prices of fiber and composite cans, fibre drums, and corrugated sheets and rolls—and, to a lesser extent, paper boxes and containers—show wide swings. These can be explained by big changes in capacity within the pulp-and-paper industry. According to Cahners Economics, new investment in plants and equipment in this field rose nearly 26 percent in 1988 and 38 percent in 1989. Cahners predicts a decrease in expansion for 1990—to 13.6 percent—but expansion nonetheless.

As shown by the graphs, that is likely to dampen inflation of pulp-and-paper prices through 1990, offering temporary relief from a period of back-to-back price hikes. (See "Pulp Prices Unsettle Industry," May 1989). Last August, a major supplier of paperboard and corrugated reported lower-than-expected second-quarter earnings in part because its attempt to raise prices still further met strong market opposition.

Small increases in glass-capacity investment appear unlikely to favorably affect prices of glass containers before the beginning of 1991. Till then, the rise in price of

ANNUAL INFLATION RATES OF GLASS, PLASTIC PACKAGING TO DROP THROUGH 1990



Data source: Bureau of Labor Statistics
Forecast source: Cahners Economics

Glass, having dropped 1987-1988, will edge back up between now and '90.

Data source: Bureau of Labor Statistics
Forecast source: Cahners Economics

Plastics, which jumped dramatically by the end of '88, are on their way down.

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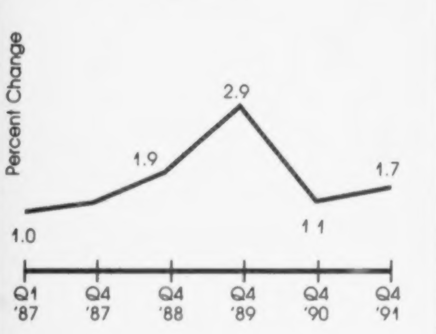
INFLATION RATES FOR ALL BUT ALUMINUM ARE ON THEIR WAY DOWN

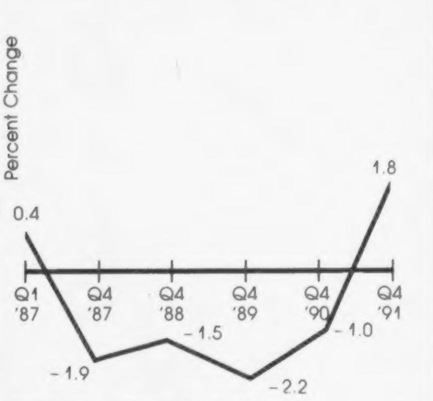
Steel cans



Data source: Bureau of Labor Statistics
Forecast source: Cahners Economics

No significant change in steel cans is expected over the next year.

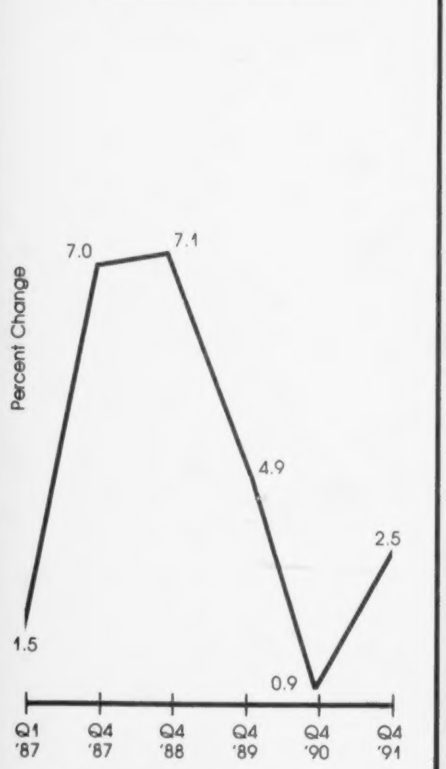
Aluminum cans



Data source: Bureau of Labor Statistics
Forecast source: Cahners Economics

Aluminum cans are on their way up from a low point at the end of 1989.

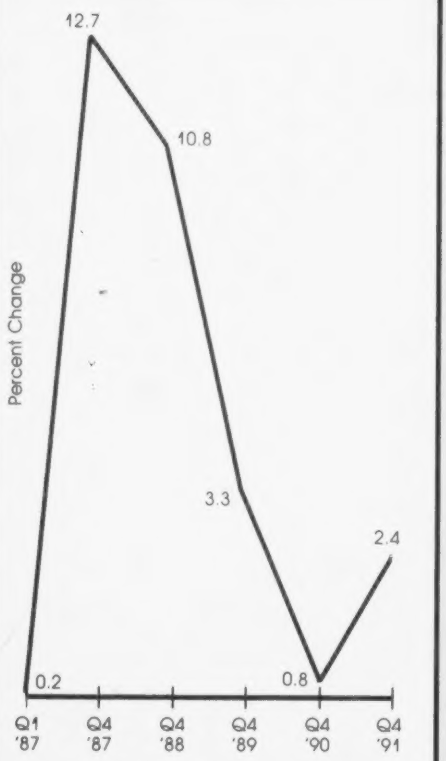
Paper boxes and containers



Data source: Bureau of Labor Statistics
Forecast source: Cahners Economics

Paper boxes and containers also are falling, headed for a low point one year from now.

Corrugated sheets, rolls



Data source: Bureau of Labor Statistics
Forecast source: Cahners Economics

What's true of paper is true of corrugated, which hit a high late in 1987.

An investment boom has led to an inventory glut

glass jars and bottles should continue.

Can-to-can competition

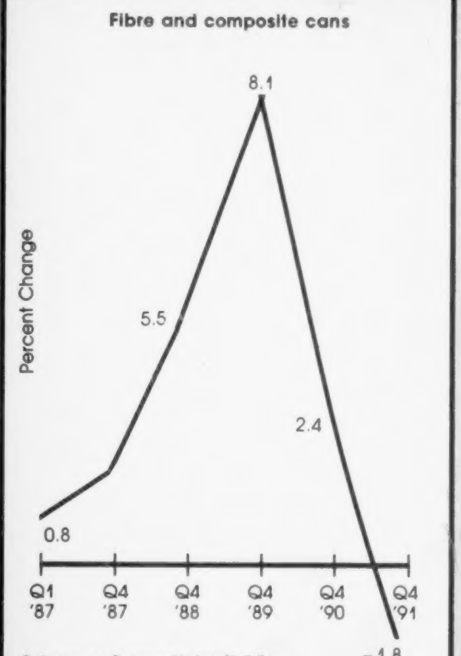
Our figures for the steel-can and aluminum-can business comprise those for all fabricated metal products, of which cans are a relatively small component. The increase in spending for plants and equipment in this area was 7.5 percent in 1988 and 4.0 percent in 1989. For 1990, that will fall to minus 2.1 percent.

Aluminum prices are likely to rise somewhat between now and next winter, and again during 1991. But that may not hurt aluminum as much as you'd think. Presently feeling renewed competition from steel in the beverage market, aluminum may find that its admirable success in post-consumer recycling will enable it to retain market share that it might have lost on the basis of price pressure alone.

Resin rollercoaster

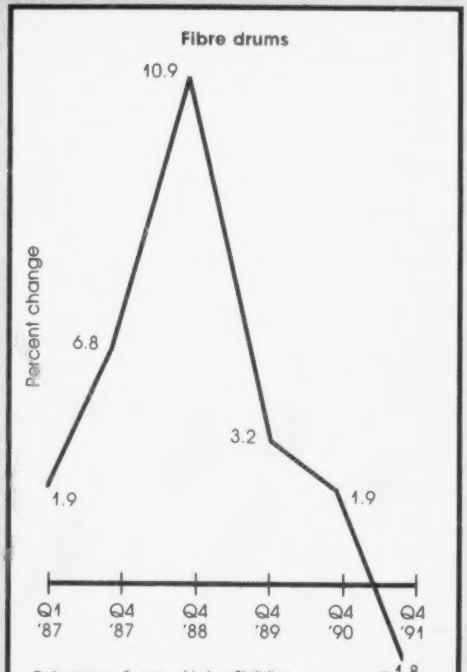
When it comes to plastic packaging, changes in the inflation rate are easy to explain. As chronicled in these pages last year ("Ethylene Crisis Alarms Packagers," July 1988), numerous factors had combined to drive the price of plastics skyward beginning in the fourth quarter of '86. Back then, producers of the feedstocks saw little reason to construct new plants. In fact, they had intentionally kept some existing facilities idle, waiting for a rise in prices large enough to warrant reopening them. It worked: As demand rose, the price of ethylene, for example, doubled in a matter of months. Prices of resins made from that feedstock rose ac-

FIBRE-BASED PACKAGING CONTINUES TO FALL



Data source: Bureau of Labor Statistics
Forecast source: Cahners Economics

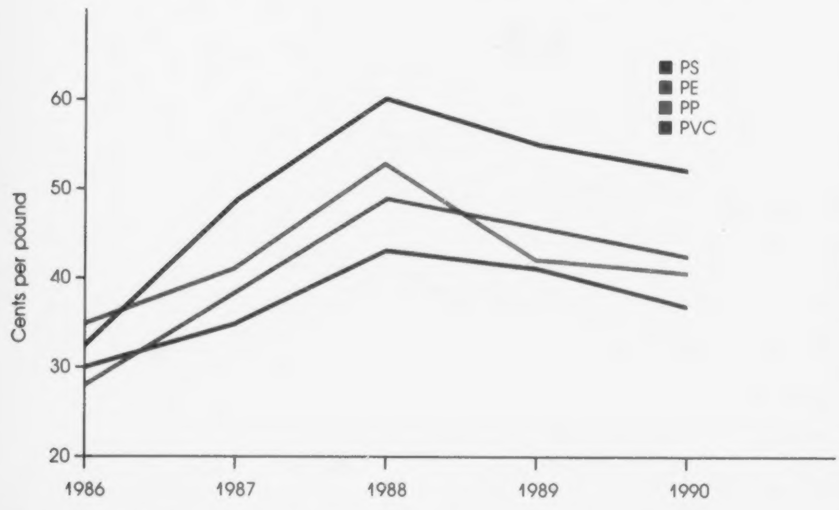
Fibre and composite cans are headed downward significantly.



Data source: Bureau of Labor Statistics
Forecast source: Cahners Economics

Fibre drums, too, having fallen greatly 1988-1989, will continue in that direction.

RESIN PRICES HEAD DOWN FROM '88 PEAK



Source: *Plastics World Magazine*

From their highs in 1988, plastic resins are falling in price and are expected to keep falling through next year.

Leadtimes are stable—a sign of moderating prices

cordingly. Others followed.

The fall in value of the U.S. dollar, growing markets at home and overseas, and even ethylene-plant explosions then pushed demand up dramatically. The price-inflation rate of plastic packaging hit 9.3 percent in the fourth quarter of '88.

Between then and now, however, the inflation rate fell to 3.2 percent. It is expected to continue downward through 1990. The reason, as reported by PACKAGING in July '88, is that seemingly all the major players in plastic-resin production suddenly began investing a portion of their higher profits in new capacity. There was an interim period during which the new or formerly idled facilities were coming up to speed. Now they're up, as is supply, and prices are down.

'Boring' leadtimes

A factor of importance equal to that of pricing is availability. Shipment leadtimes for the various packaging materials have not lengthened significantly in recent months. That's a good sign that supply has remained steady.

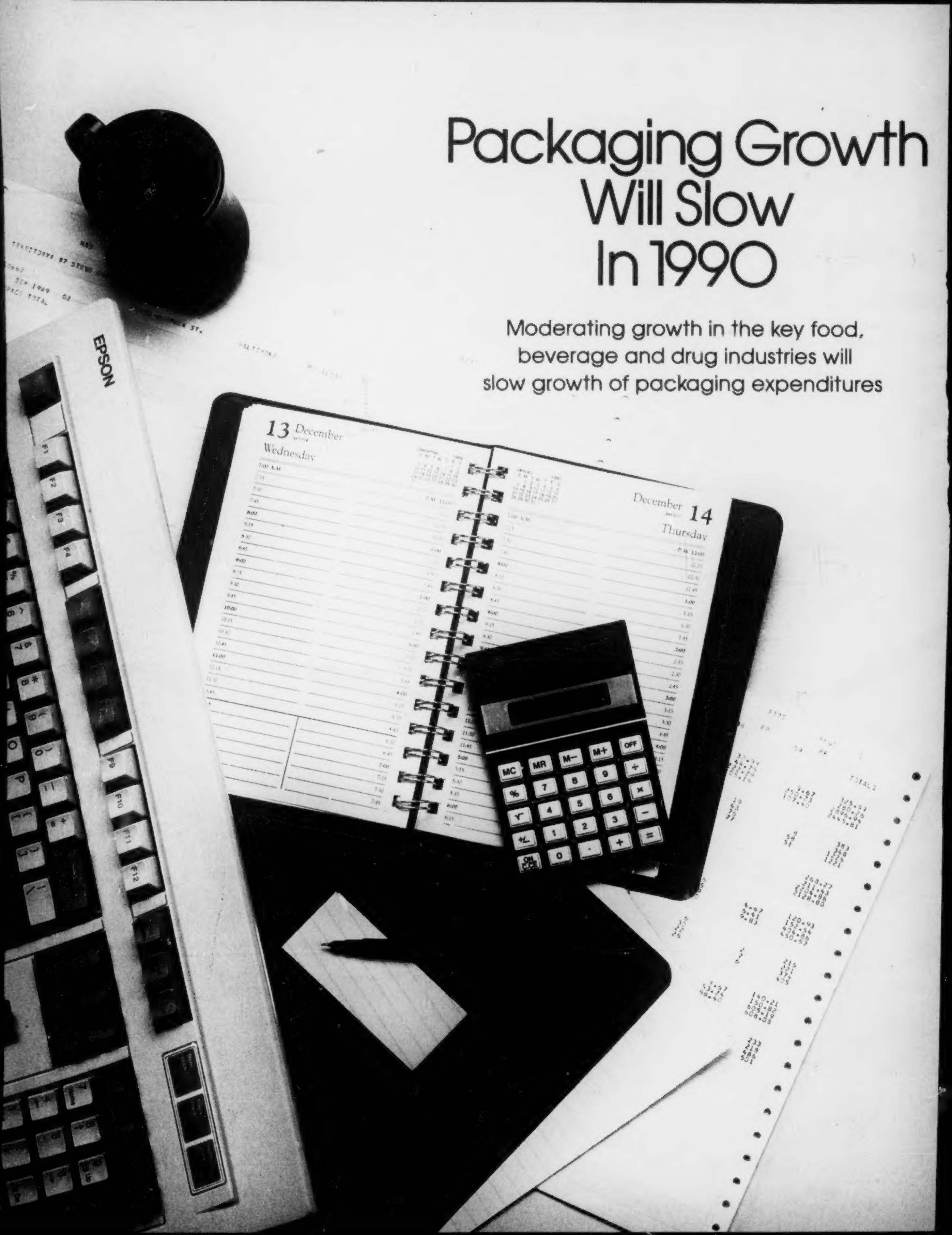
Shipment leadtimes also provide another means of predicting price changes, since lengthening leadtimes result from diminishing supply relative to demand.

According to PACKAGING's study of materials leadtimes, no big jump in prices is in store, since leadtimes through 1991 are expected to remain right about where they are now. As a source from Cahners Economics puts it, "1990 is going to be a boring year in terms of leadtimes, and that's good."

—*Greg Erickson*

Packaging Growth Will Slow In 1990

Moderating growth in the key food, beverage and drug industries will slow growth of packaging expenditures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PACKAGING FORECAST BY INDUSTRY, 1989-1991

(Value of packaging materials, containers and supplies, $millions)

Industry	'89 Packaging Consumption	Percent Growth	'90 Packaging Consumption	Percent Growth	'91 Packaging Consumption	Percent Growth
Foods	$24,142	8.5%	$25,462	5.5%	$27,535	8.1%
Beverages	$13,520	8.8%	$14,430	6.7%	$15,026	4.1%
Drugs, Soaps & Toiletries	$6,561	12.0%	$6,929	5.6%	$7,528	8.6%
Electrical Machinery	$4,785	5.5%	$4,908	2.6%	$5,392	9.9%
Fabricated Metal Products	$3,260	13.2%	$3,389	4.0%	$3,674	8.4%
Other Chemicals	$2,404	2.3%	$2,610	8.6%	$2,801	7.3%
Non-Electrical Machinery/Computers	$1,638	10.6%	$1,716	4.7%	$1,879	9.5%
Instruments	$1,508	4.0%	$1,556	3.2%	$1,686	8.4%
Tobacco	$720	9.1%	$747	3.8%	$792	6.0%
All Other Industries	$12,296	7.9%	$12,979	5.6%	$13,998	7.8%
TOTAL	$70,834	8.5%	$74,726	5.5%	$80,311	7.5%

Sources: PACKAGING, based on forecasts by Cahners Economics
Data Source: U.S. Dept of Commerce

Consumption of packaging will increase 5.5 percent in 1990 to nearly $75 billion.

This is the conclusion reached by the editors of PACKAGING magazine in compiling this first exclusive forecast for the packaging field.

The 5.5 percent growth rate indicates a slowing in growth of packaging consumption following robust gains in 1988 and '89. The primary reasons are a projected slowdown in the growth in value of manufacturing shipments, based on a slowing of the general economy, and stabilization of the prices of many primary packaging materials.

Still, the 5.5 percent gain most likely constitutes real growth in overall packaging consumption. While no statistically reliable deflator for packaging has yet been devised, Cahners Economics forecasts a producer inflation rate of only a little more than three percent in 1990.

And added to the strong gains of the late '80s, the value of packaging consumption has risen by a third since 1985, from $56 billion to a forecast $74.7 billion in 1990.

These estimates of the value of packaging consumption are generated by an exclusive and unique methodology which allows forecasts of packaging growth in the variety of industries that consume packaging materials. The estimates are based on federal Department of Commerce data of the value of manufacturing shipments in the various industries and forecasts of the growth of such shipments by Cahners Economics.

PACKAGING editors then applied different ratios of packaging costs to the value of shipments for each industry, factoring in trends within each industry, changes in the cost of primary materials and other variables.

A crucial element in the slowing growth rate of packaging consumption in 1990 is a slowdown in growth rates in the key food and drug, soaps and toiletries industries.

But "slowdown" must be seen in perspective. These moderate growth rates come on the heels of extremely robust gains in '88 and '89. And in both cases, we project that growth of packaging consumption will outpace actual shipment growth.

Most industrial and consumer goods industries are also forecast to show slower growth in 1990.

Finally, we expect nearly all industries will see renewed strong growth again in 1991.

On the pages that follow, PACKAGING editors analyze the trends and dynamics that are affecting packaging.

—Robin Ashton

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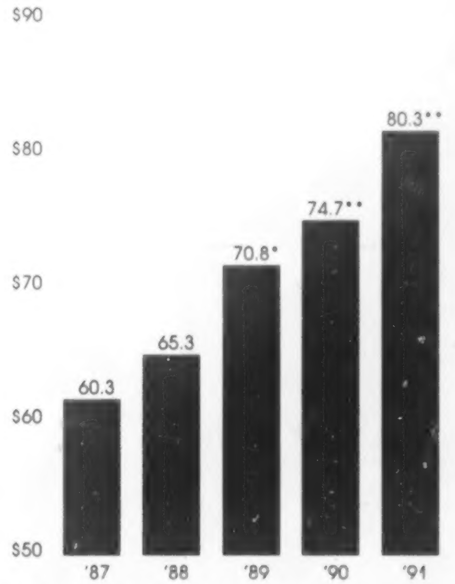
THE PACKAGING MARKET FORECAST
TOTAL ALL INDUSTRIES
1987 - 1991
($ Billions)

Consumption of packaging materials and supplies will grow by a third 1987-1991.



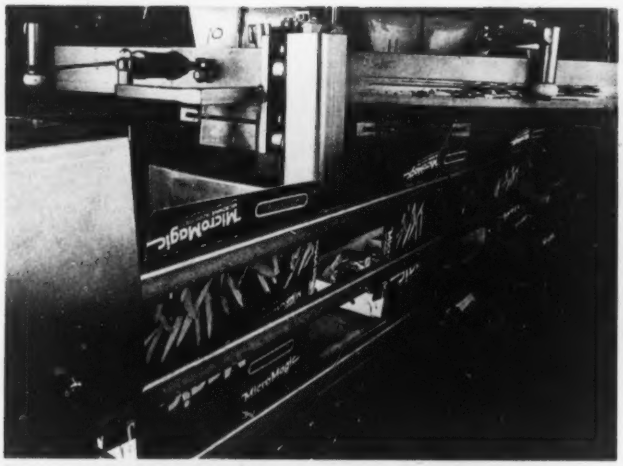
Sources: PACKAGING, based on forecasts by Cahners Economics. Data source: U.S. Dept. of Commerce

*Projected **Forecast

FOODS

(\$millions)

Year	Consumption	Growth
'87	\$20,167	—
'88	\$22,241	10.3%
'89	\$24,142	8.5%
'90	\$25,462	5.5%
'91	\$27,535	8.1%



Demand for fresh, 'healthy' foods is having a pronounced effect on packaging. MAP/CAP technologies are expanding for minimally processed prepared foods and produce.

'Fresh And Healthy' Drive Food Packaging

Food packagers take heed. "Convenience" is no longer the dominant buzzword in food product marketing. It's been supplanted by a new word and concept—health.

"Wellness" is the trend of the '90s. Americans are shuddering at their own excesses and are cleaning up their acts as they collectively become older. The result is growing demand for minimally processed or fresh foods with fewer preservatives and extensive ingredient information, trends that will have a pronounced impact on packaging.

Of course, demand for food products in convenient, easy-to-prepare forms continues to drive food packaging development. And a proliferation of techniques that use packaging as the final point-of-sale billboard is also a major trend.

But the growing demand for fresh and healthy foods will lead to strong growth of controlled- and modified-atmosphere and other high-tech packaging technologies if technical and distribution challenges can be overcome.

Trend watchers predict the coming of a "fresh corridor" within the '90s supermarket. It will feature fresh, high-quality foods portioned for microwave reheating, or already hot for immediate consumption.

Microwave experts predict next-to-zero growth in frozen microwavable products in favor of shelf-stable and especially refrigerated products for the ubiquitous appliance. The "fresh corridor" will be buttressed by a produce department filled with branded, convenience-processed fruits and vegetables, many packed using MAP/CAP.

In addition, all packagers of processed foods will provide more nutrient information on labels.

Established brands continue to be updated and enhanced. It's easier and cheaper than developing new brands. This trend, driven by tight shelf space, slotting fees and the fragmenting of mass advertising, has generated new techniques to draw attention to the package. The use of metallized films and foils, brighter graphics, holograms, and in-package games and give-aways is exploding.

Overall, Americans are looking at food in a new way. New packaging techniques and technologies are an essential aspect of this trend.

—Melissa Larson

CONSUMPTION OF MICROWAVE-ONLY MATERIALS, 1989 THROUGH 1994

(in millions of units)

Material	1989	1990	Percent Change	1991	Percent Change	1992	Percent Change	1993	Percent Change	1994	Percent Change	CARG[1]
Popcorn bags	1,400	1,700	21.4%	2,000	17.6%	2,200	10.0%	2,420	10.0%	2,620	8.3%	13.5%
Paperboard cartons with susceptors	300	500	66.6	600	20.0	650	8.3	600	-7.7	600	0.0	14.9%
Rigid containers with susceptors	NA	75	—	200	166.7	350	75.0	500	42.9	700	40.0	74.8%[2]
Multi-layer tubs	200	350	75.0	600	71.4	900	50.0	1,200	33.0	1,500	25.0	49.6%
Multi-layer trays	50	100	100.0	200	100.0	350	75.0	450	28.6	600	33.3	64.4%
Polypropylene containers	200	300	50.0	375	25.0	425	13.3	480	12.9	515	7.3	20.8%
Total	2,150	3,025	40.7%	3,975	31.4%	4,875	22.6%	5,650	15.9%	6,535	15.7%	24.9%

NA: Not available [1]Compound Annual Growth [2]1990-1994

Source: FIND/SVP

Multipacks, New Sizes Lead Beverage Trends

The plethora of new beverages and beverage packaging in the next few years will have to meet a dizzying array of demands from a restless, fickle marketplace.

First and foremost, the Pepsi Generation is getting gray at the temples. To appeal to this tide of aging Baby Boomers will come a wave of "New Age" beverages that competes with the bastions of beer and soft drinks. These newcomers are typically juice-based drinks and bottled waters stealing thunder from the once-popular wine coolers.

Bottled water especially is making its presence felt. With annual sales breaking the $2 billion mark this year, the category may not stand out much against the overall beverage backdrop. But, annual growth rates over 10 percent through 1992 are the stuff of dreams to America's major brewers who have been seeing little or no growth for years now.

Plastic dominates and will continue to gain share as the packaging material of choice for bottled-water packaging. Polycarbonate containers in the 5- to 6-gallon size are the mainstay of the commercial and home-delivery markets. Now, similarly clear containers in PVC and PET are making inroads in retail single-serving and larger sizes.

Growth in the demand for soft drinks remains a bright spot in the beverage picture. Several developments are gaining favor among the Top Five soft-drink bottlers who together spend upwards of $15 million every business day on packaging. Both Pepsi and Coke have introduced 20-ounce, non-returnable glass bottles, often with banners shouting "Four ounces free." Non-traditional selling methods using multipacks are also gaining momentum. The 24-can case has supplanted the 12-can case. Multipacking of four 2-liter PET bottles is also on the horizon. The only question is whether the average shopper can easily carry the 18-pound package.

One packaging supplier summed it up rather succintly, "Marketing dynamics dictate that whatever works well, works." So we may be seeing more 15-can cases labeled "Three more free," or even hexagonal multipacks of up to 36 cans..

Faced with the prospect of fewer new legal consumers of alcohol in the next 15 years, brewers do not hold much hope for any real growth in the foreseeable future. According to one brand manager, growth will have to come from the aging population by getting more citizens over-65 to drink more beer.

New packaging plays an important role in this effort. The wave of longneck glass-bottle introductions begun in 1988 seems to have run its course. The shape appeals to aging Baby Boomers and nostalgic seniors, and at least one brewer has employed crowns that must be removed with a bottle-opener.

Two categories waiting in the wings are iced coffees and aseptics for the mature market. Long popular overseas, several iced coffees in 8-ounce cans made their debut at the recent Interbev89. Intergenerational marketing may be the answer to getting more Gray Boomers to slurp everything from juices to diet supplements from the multilayer boxes. Beverage packagers hope grandchildren will set an example for their grandparents to sell them on the convenience of aseptic containers.

— *Mark Spaulding*

BEVERAGES

($millions)

Year	Consumption	Growth
'87	$11,674	—
'88	$12,428	6.5%
'89	$13,520	8.8%
'90	$14,430	6.7%
'91	$15,026	4.1%

Clear plastic bottles zip through a modern, bottled-water packaging line.

TOBACCO

($millions)

Year	Consumption	Growth
'87	$591	—
'88	$660	1.2%
'89	$720	9.1%
'90	$747	3.8%
'91	$792	6.0%

20 CIGARETTES
Malibu
MENTHOL 100's
LOW TAR
Malibu
100's
LOW TAR

Graphic design plays an increasingly important role as tobacco companies tailor brand styles to individual consumer preferences.

Tobacco Companies Fight Back With 'Style'

Like Rocky Balboa, tobacco companies can take a punch and keep on standing. Even in the midst of declining markets and negative publicity, tobacco giants are fighting back. New products, extensions of major brands and redesigns to update an existing product's image are key to their strategy.

Since 1981 domestic sales have declined 11 percent; a 1 to 2 percent decline per year, but the decline is slowing. On the up side, exports have risen 36 percent since 1981, especially in Asian markets, since the loosening of trade barriers.

To compete for market share among the dwindling number of current smokers, companies have been tailoring brand styles to particular types of smokers. In 1980, 176 brand styles of cigarettes were available. As of July 1989, the figure increased 52 percent to 339 brand styles.

Because females are smoking more than ever (approximately 60 percent of all smokers are female), many brand styles are now specifically designed to capture their attention with feminine upscale, contemporary package designs.

A growing trend is in the savings segment: Premium quality products at a lower price account for 15 percent of the total market. While the profit margin is not as high as the major brands, volume is. According to Dave Isbister, senior vice president, Technology, Leaf, Packaging & Tobacco Processing at R.J. Reynolds Tobacco Co., consumers will decide what the industry will do here, but this segment is definitely on the rise.

Various types of alternate packages have been tried over the years. To date, none of them have been big sellers. Soft and hard packs have become standard in the industry because that is what existing packaging equipment is set up to handle.

Although more expensive to produce, hard packs have found a niche—55 percent of the 18- to 20-year old group prefer them. This trend relates to life and dress styles: Boxes provide additional product protection when carried in the pocket of jeans.

Recent improvements in inks and in printing technology have contributed to the industry's high graphics standard. Watch for a movement toward water-based inks in the future because of EPA demands, notes David Scarlet, partner at Peterson & Blyth, the design firm for American Tobacco.

Companies are spending more to produce quality packaging to enhance the image of their products. R.J.R.'s Isbister explains, "We look even more carefully today at the material costs and the material *tradeoffs*." He adds, "A certain graphics design may be less expensive to print, but might not be what the consumer wants. The extra cost is absolutely justified."

In the early '80s, most plants installed improved packaging equipment. Packaging speed doubled from 200 packs a minute in 1980 to the current speed of 400 packs a minute. Faster packaging speeds dictate demanding tight tolerances in materials, such as precise cutting of carton blanks for hard packs and improved uniformity of paper wrappers for soft packs. Crucial to controlling tolerances are quality partnerships between tobacco companies and their suppliers.

As in any industry, the goal is to make the best possible package at the lowest possible cost. Further improvements in graphics and a continued increase in packaging speeds are the tobacco industry's strong one-two punch.

—Lisa McTigue Pierce

Pharmaceuticals Get An O-T-C Facelift

For fast, fast, fast relief of symptoms due to the common cold, nine out of 10 consumers spell "remedy" D-I-Y. Increasingly, consumers are avoiding both doctor and druggist . . . and working at curing their ailments all by themselves. This trend appears likely to remain strong while the FDA goes on approving formerly prescription-only pharmaceuticals for sale over the counter.

Overall, production of drugs and medicines grew at an amazingly strong 9.4 percent in 1988. The increase in production slowed to 3.2 percent in 1989. However, Cahners Economics says production will accelerate to 6.6 percent in 1990 and rise by 7.1 percent in '91. One consultant to the pharmaceuticals industry says he foresees sales of O-T-C drugs hitting the $30 billion mark by 2000.

Who are the consumers of all these O-T-C drugs? Some are elderly, and their number is rising. But baby boomers represent a larger market. They are growing old rambunctiously . . . but not without feeling a bit sore or rundown every now and then. They're affluent enough to pay for an office visit but don't have the time to go.

How will all these demographic factors affect the field of pharmaceuticals packaging? For one thing, hot O-T-C competition will require even the most conservative drug companies to develop packages that are snazzy and consumer-grabbing.

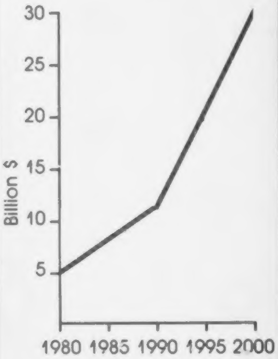
Convenience, too, will command attention: Some existing closures, notably child-resistant types, are already unpopular with older consumers. New methods of increasing the ease of opening, dispensing and closing drug containers while helping ensure tamper resistance and child resistance will no doubt be introduced.

Also affecting the packaging of drugs is the FDA's continuing investigation into mislabeling. Among other recommendations, the FDA has suggested that pharmaceuticals companies reduce recalls by switching from cut labels to roll labels and by installing electronic inspection systems.

Use of blisters is growing among makers of prescription drugs—especially for physician's samples and compliance packages. However, any large-scale move from bottles to bubbles probably will face opposition from elderly consumers, who say fumbling with blister packages makes them feel older than they really are.

—Greg Erickson

MANUFACTURER SALES OF O-T-C DRUGS TO MORE THAN DOUBLE



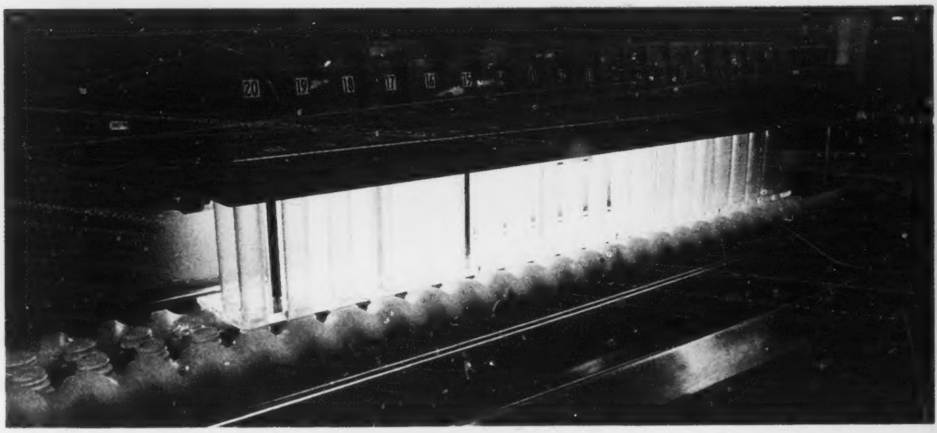
Source: Kline & Co.

The future looks bright for over-the-counter pharmaceuticals, which should grow much faster than prescription drugs.

DRUGS, SOAPS & TOILETRIES

($millions)

Year	Consumption	Growth
'87	$5,360	—
'88	$5,856	9.3%
'89	$6,561	12.0%
'90	$6,929	5.6%
'91	$7,528	8.6%



Moving out into the O-T-C spotlight, pharmaceuticals will need new packaging to fight the shelf-presence war.

HOUSEHOLD CHEMICALS

Environmental Concerns Are The Cleaner Trend

Packaging for household cleaning products has been influenced, perhaps more than any other retail segment, by environmental concerns.

Category giant Procter & Gamble got the ball rolling by announcing it was using recycled PET resin for some of its packaging. The European and Japanese practice of packaging superconcentrated refills of cleaning products may catch on here, too (the consumer mixes the superconcentrate with water in the original package).

Super-concentrated detergent powders in compact packages will begin hitting store shelves here in the next 12 months, as domestic soap giants respond to competition from Japanese products such as Attack.

The experimentation with super-concentrated products has added elements. Merchandising analysts note that the smaller packages will open cramped shelf space for more products. And widescale acceptance of superconcentrates should reduce overall packaging costs.

Meanwhile, all-in-one "convenience" detergent/softener products, such as Fab 1-Shot, have not done well. The packaging may be ingenious, but the cleaning performance has not been up to consumers' expectations. Industry analysts suggest shoppers prefer separate cleaning and conditioning products, well-packaged, that perform brilliantly.

The jury is still out on Dowbrands' Spiffits, the cleaner-and-towel in one. Similar products, such as Scott Paper's Once Overs, have been withdrawn from test-market. Packagers may be realizing that convenience is not the only reason consumers accept a new cleaning product.

While liquid detergents for automatic dishwashers have grabbed substantial market share from powders, powdered laundry detergent introductions appear to have dreversed the wide-spread conversion to liquids.

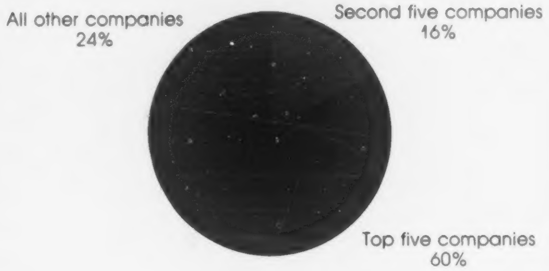
The new powder products are not all packaged in a paperboard box. Several powder detergents, softeners and bleaches have appeared in clear plastic bottles. The plastic container will probably continue to be the dominant package for this type of product.

Decorating trends for plastic bottles continue to favor fluorescent colors, in-mold labels and even more banners touting the products' fragrance-free, new-and-improved claims. Self-draining spouts are proliferating. And multiple sizes, from superjumbo on down, will no doubt continue to be offered as marketers strive to provide a size for every demographic group.

The segment will continue to represent an active market for new closures, as dispensing devices from pump triggers to large-orifice closures for squeeze bottles top off the latest product entries.

—Melissa Larson

U.S. SALES OF HOUSEHOLD CLEANING PRODUCTS BY COMPANY



Total U.S. Sales of Household Cleaning Products $9.2 billion

This chart shows the dominance of the U.S. houshold cleaning products segment by the top five soap "Giants." However, even these megamarketers need to watch the Japanese in the coming year.

Source: Kline & Co., Inc.

COSMETICS

Packagers Polish Mass-Market Cosmetics

In an aging, increasingly affluent market of shoppers with more money than time, mass-market cosmetics, toiletries and fragrances are looking the part.

Supermarket aisles are ablaze with pearlescent bottles and tubes. Therapeutic home hair-care regimens—including those for men with thinning hair—try to horn in on salon product sales. Slick tubes of skin gels and makeup are targeted at working women too busy for a department-store makeover. And the air is filled with the competing scents of mass-market fragrances.

Glitzy packaging is a big part of the sell. And the lion's share of current personal-care packaging is plastic. Neon-colored closures, outer cartons, pearl pigment effects, and high-performance labeling grab the eye and add an aura of value to the product. These are a few of the reasons why packaging sales in this hot segment are growing at a healthy 6.3 percent clip, according to research firm Frost & Sullivan.

Men are no longer shy about taking care of their skin and hair, and products for them are proliferating. Clean design and decoration suggest a "scientific" formulation which appeals to males, especially those with balding pates.

Hair-care products are also proliferating for the over-40 set, as marketers draw the obvious conclusion from demographic trends. Gains in products for mature Americans may help offset a decline in sales of mousses and gels sparked by the teenage "big hair" boom.

Packagers and their suppliers have worked wonders with the plastic bottle and tube. Clear hair and skin products appear in see-through plastic bottles decorated with clear labels.

Tubes can rest upside-down on the closure, and can be decorated with high-performance pressure-sensitive labels as well as direct printing. Cut-out cartons reveal the product within while adding "weight" and more room for product claims. And fragrance and sun-care items have appeared in everything from banana-shaped tubes to key chains.

Look for increased attention on closures, labels and stock but expensive-looking bottles, tubes and jars in this segment, where the package is a crucial sales tool.

—Melissa Larson

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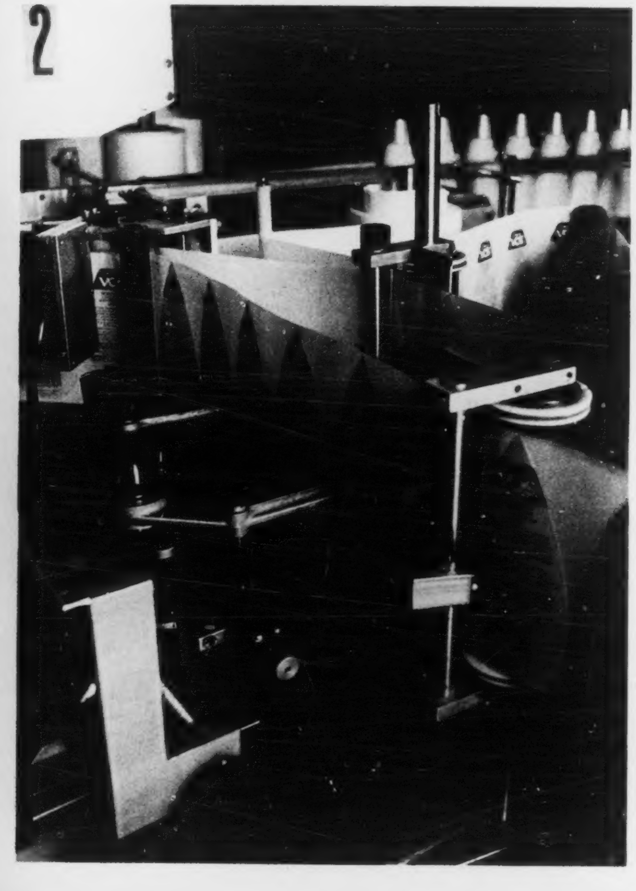
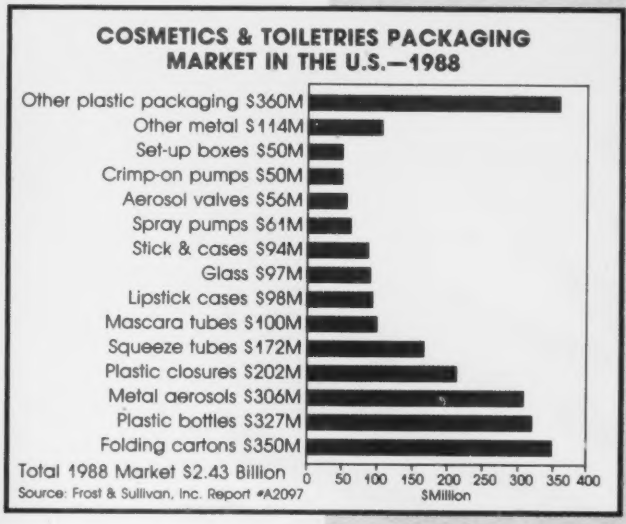


Beautiful decorating is a must for personal-care products—but labels must stand up to repeated use.



COSMETICS & TOILETRIES PACKAGING MARKET IN THE U.S.—1988

Total 1988 Market $2.43 Billion

Source: Frost & Sullivan, Inc. Report #A2097

Chemical Packagers Await Clear Standards

OTHER CHEMICALS

($millions)

Year	Consumption	Growth
'87	$2,189	—
'88	$2,351	7.4%
'89	$2,404	2.3%.
'90	$2,610	8.6%
'91	$2,801	7.3%

"A state of suspension," is how one packager of specialty chemicals describes the current climate.

While many industrial and specialty chemical makers are looking to upgrade their packaging, uncertainty regarding the final disposition of a host of regulations and standards keeps them guessing.

In the wider world—and chemical production is a global business—new standards are due from the United Nations and from a European Economic Community preparing for 1992. The U.N. standards are scheduled to go into effect Jan. 1, 1991. The new European standards are expected sooner, by March 1990.

In the U.S., meeting these new standards is creating uncertainty and confusion, mostly because the federal Department of Transportation is having trouble getting new DOT standards that match the tougher international standards through Congress.

According to Van Doren F. Douglass, manager of regulatory services for J.T. Baker, Inc., a maker of specialty chemicals based in Phillipsburg, N.J., chemical packagers anticipate they will have to meet tougher drop-height requirements, which in Europe and the U.N. codifications are based on tougher performance standards. But the phrasing and timing of new DOT regulations remains unclear, making planning almost impossible.

Suppliers of standard containers such as drums are presently meeting the tougher standards as they are now known, but users and suppliers of combination packaging face many unresolved questions.

These uncertainties come at a time when many chemical makers are gearing up for what should be a healthy two years.

Following robust growth in '87 and '88, shipments growth dropped back in '89 to only 2.3 percent. But with the economy expected to begin an upward swing next year, Cahners Economics expects industrial chemical shipments to rise 8.6 percent in '90 and an additional 7.3 percent in '91. Our forecasts of packaging consumption, a substantial $2.6 billion in '90, mirror these growth rates. But in the longer run, tougher standards worldwide can be expected to raise packaging costs. Some analysts believe the new standards could drive chemical packaging costs 25-50 percent higher in the next few years.

Meeting new, tougher packaging standards are not the only challenges chemical makers face. The wide-ranging implementation of statistical process controls in many manufacturing industries, an element of the larger drive for higher quality, has placed new demands on fill-weight and volume tolerances.

Since many chemical products become ingredients of a "recipe" for other products, chemical buyers are demanding that 50 pounds be 50 pounds, leading to increased investment in checkweighers and volume-filling control devices. Such quality demands will only expand in the future.

—Bruce Holmgren and
Robin Ashton

KOPPERS
KOPPERS
KOPPERS

Uncertainty about pending standards and demands for more accurate packaging are among the challenges currently facing industrial chemical packagers.

Clear Growth Ahead For Hardware

The dimly lighted old hardware store with the creaky wood floor and the cobwebs has given way to a dazzlingly bright home center with aisles three shopping carts wide. Rotating bins full of nails and screws have gone the way of the pickle barrel. Today, practically everything in the home center is packaged. You don't grab up seven wing nuts; you buy two packages of six each. And the avuncular jack-of-all-trades hardware-store proprietor who used to cheerfully explain the difference between molly bolts and toggle bolts has retired. These days it's the package that does the instructing and selling.

According to a study prepared by Cahners Economics for readers of the Cahners magazine *Building Supply Home Centers*, all this has boosted convenience for the consumer: "Products packaged with simple instructions continue to bolster healthy D-I-Y sales," says Cahners. Consumers increasingly assume they can do the desired remodeling or repair job themselves, in part because informative packaging makes the job look easy.

Packaging has also boosted convenience for retailers, who realize that accurate inventorying is a must. Bar coding has become crucial, but it's tough to put a bar code on a single drill bit.

Increasingly, the packaging of choice for hardware items—everything from a few lock washers to a complete soldering gun set—is made of clear plastic, which gives shoppers a chance to examine the product without opening the package. Transparent blisters, clamshells and skin packaging are rapidly replacing opaque cartons and cases.

Carl Perry, manager of corporate purchasing for Vermont American, the world's largest manufacturer of cutting tools for the retail market, says, "I have 10 to 15 projects on my desk right now that are moving from other kinds of packaging into PVC blisters."

Even some remarkably heavy items are now peggable thanks to their plastic packaging. Others, because they're too big or weighty, are still packaged in paperboard or corrugated. Those cartons, like the transparent packages displayed nearby, must convey a wealth of information. Again, the disapearing sales clerk is the reason.

Cahners Economics foresees the market for home-improvement materials remaining strong, no matter what happens to the economy short-term. "In good times," says the report, "people have money to spend; in bad, they take on projects to enhance their home's value . . . ."

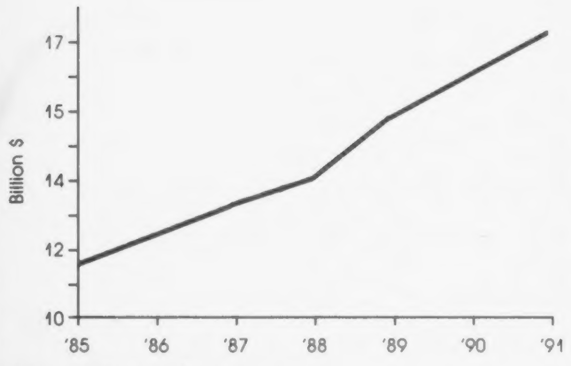
—Greg Erickson

FABRICATED METAL PRODUCTS

($millions)

Year	Consumption	Growth
'87	$2,700	—
'88	$2,880	6.7%
'89	$3,260	13.2%
'90	$3,389	4.0%
'91	$3,674	8.4%

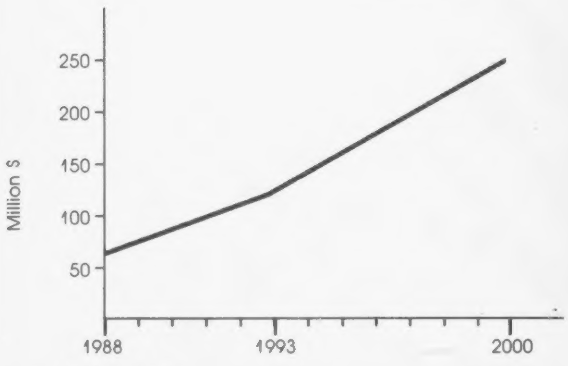
HARDWARE-STORE SALES TO CONTINUE CLIMBING



Data source: Commerce Dept.
Forecast Source: Cahners Economics

Packaging can take some credit for the continued growth in hardware sales, since it boosts convenience and communication with the consumer.

SALES OF 'VISIBLE' PACKAGING FOR HARDWARE TO QUADRUPLE BY 2000



Source: The Freedonia Group

Sales of blisters, clamshells and skin packaging for hardware products will nearly double 1988-1993 and double again by the year 2000.

Ultra-Safe Packaging Grows For High-Value Electronics

A combination of fire-retardant corrugated cases and combustion-modified cushioning will become standard packaging equipment for the computers and electronic office equipment of the '90s.

Look at the serious fire risks involved in a modern computer warehouse. The high value of computer hardware, typewriters, faxes and other electronics translates into hundreds of millions of dollars in risk exposure for a typical high-density warehouse. Values can easily reach $3,000 per square foot.

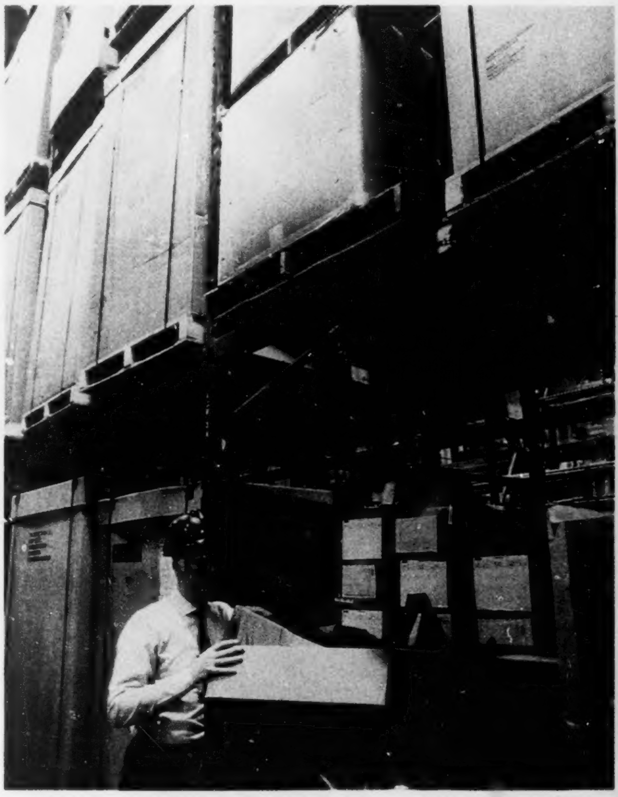
Escalating insurance premiums up to $1 for every $100 worth of product has packagers scrambling to come up with ultra-safe containers for these products in storage and transport. In addition, growing competition in the industry puts pressure on electronics manufacturers to cut costs wherever possible.

Enter fire-retardant packaging. It offers users three ways to save money. A perceived reduction in fire risk tends to drop insurance premiums, and consequently, companies may avoid the cost of upgrading a warehouse's sprinkler systems. And in the event of a fire, actual damage is minimized.

But all the ultra-safe packaging in the world wouldn't help much if it didn't also protect and cushion the product properly. That's where the developments of the past few years are coming into play. Fire-retardant bubble wraps and combustion-modified foam-in-place systems are making strong headway in the electronics-packaging market. These materials have now reached a stage where they can offer users performance equal to regular cushioning, as well as the benefits of a lower fire risk.

The burgeoning home-electronics industry, expected to broach $40 billion come 1993, has some wild gadgets up its sleeve. Mini-cellular phones, high-definition TVs and a wide variety of remote controls for home automation await the consumers of tomorrow. Getting these products to an anxious market safely and in good condition will become even more important in such a highly-competitive field. Ultra-safe packaging will move from being an important part of the overall product distribution cycle to a crucial factor in a manufacturer's ability to compete in the marketplace.

—Mark Spaulding



Fire-retardant cases and cushioning will play an increasingly important role in protecting computers and office electronics in the warehouse of the '90s.

NON-ELECTRICAL MACHINERY/ COMPUTERS

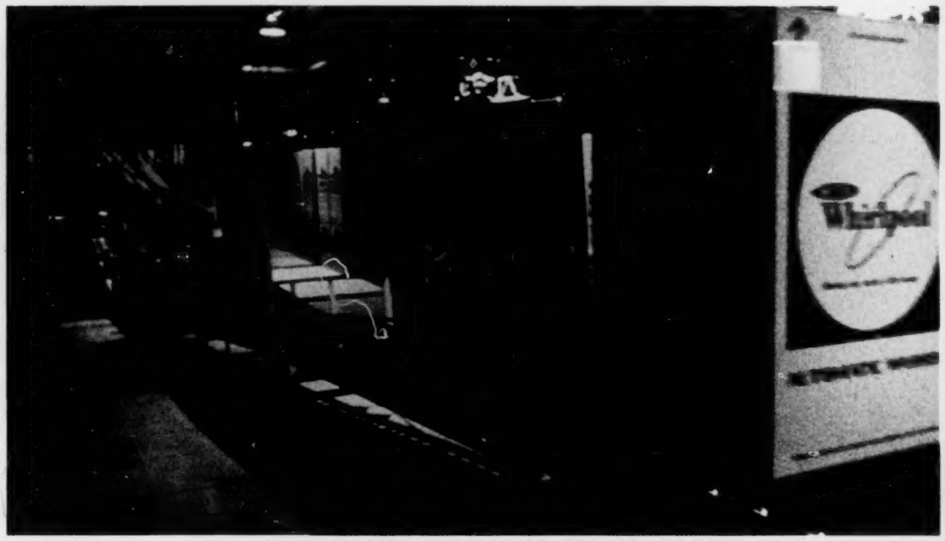
($millions)

Year	Consumption	Growth
'87	$1,300	—
'88	$1,481	13.9%
'89	$1,638	10.6%
'90	$1,716	4.7%
'91	$1,879	9.5%

ELECTRICAL MACHINERY

($millions)

Year	Consumption	Growth
'87	$4,208	—
'88	$4,534	7.7%
'89	$4,785	5.5%
'90	$4,908	2.6%
'91	$5,392	9.9%



Packaging for major appliances doesn't have to look good, it just has to protect the product.

Major Appliances Look For Less Material

You would expect a big product to have a big package, right? Wrong. According to Brian Gallagher, senior packaging engineer at the St. Joseph Technology Center of Whirlpool Corp., bigger does not necessarily mean more. Rising prices and the solid-waste issue are motivating manufacturers of major household appliances to use less packaging.

Corrugated continues to be the widest-used packaging material, but that could be changing. Recent increases in corrugated prices goaded companies to find alternate materials. Whirlpool, for one, switched from corrugated to expanded polystyrene to package its Thin Twin laundry product, an all-in-one washer/dryer unit. Consequently, the company cut the number of packaging components from 29 to 12—a 41 percent reduction. Whirlpool reduced packaging costs by 14 percent and improved the performance of the package.

Cost pressures will continue, according to Gallagher. "Indications are for *all* materials to continue to increase in price. It will be more critical for packaging engineers to be able to evaluate where the costs are best used: in the product, or in the package," Gallagher adds. "Common sense says put it into the product, but sometimes our product and package evaluations disagree with that approach."

Increased product protection along with decreased material usage is one reason high-performance corrugated continues to hold its own. (See State-of-the-Art article on high-performance corrugated elsewhere in this issue.) Gallagher sees an effort in the industry to reduce the thickness of the liners and still maintain stacking strength. In addition to cutting waste, this allows companies to use less warehouse space.

Gallagher says that he also believes solid-waste legislation will influence future trends. Corrugated is recyclable, but the underlying need is to reduce the *amount* of packaging no matter what material is used.

For smaller household appliances, eye-catching four-color graphics provide the point-of-purchase appeal needed for shelf displays. Tom Kieckhafer, president of Westbend's Housewares Div., notes, "Packaging and how we package our products is extremely important to the success of our business. We rely on four-color graphic presentation of our products." He adds, "Even with actual product display, the consumer will read the box for features. In-use pictures printed on the box help complete the retail sale ."

Pre-printed linerboard does provide the vivid colors that retailers prefer. But according to Kieckhafer, it's more cost effective in the U.S. to use a one-color box (preferably a bleached white carton) and four-color printed litho labels on one, two or three sides of the case for the same billboard effect.

—Lisa McTigue Pierce

Complex Needs Challenge Medical Packaging

Packaging continues to play a prominent role in the way medical, dental and surgical products are produced, sold and used.

The shift to diagnosis-related groups (DRG's) and greater product accountability for the purposes of insurance coverage have already changed the way hospitals use medical devices and supplies, from surgeon's gloves to disposable scalpels.

In the 1990s the emphasis will continue to be on disposability and ease of use—peelable lidstock on plastic trays, packaging which can be sterilized in a number of ways, and bar-coded labels to facilitate patient accounting.

However, packaging of medical devices is being affected even more by the shift in where various tests and procedures are performed—and by whom.

Not only are more tests being performed than ever before, given the increase in drug-abuse screening policies, AIDS testing and the emergence of home diagnostic kits, but many test kits are now designed for on-the-spot use.

Large hospitals and laboratories are focusing on complicated testing requiring skill in procedure and interpretation, and are leaving routine screening tests to doctors and small labs.

This trend, along with the success of home tests for pregnancy, ovulation, blood sugar and the like, have focused packager attention on making the kits user-friendly. Packaging of these simpler tests often plays an integral role in simplifying analysis, as well as making them easily portable and disposable.

The most popular package for most medical devices remains the thermoformed plastic tray with peelable, printed lidstock. This basic package is economical and easy to identify, sterilize, use and dispose of.

Several formulations of "medical grade" plastics have application in this field, including PVC, polypropylene, polyester, polystyrene and some polycarbonates. Glass appears to be on a steady decline.

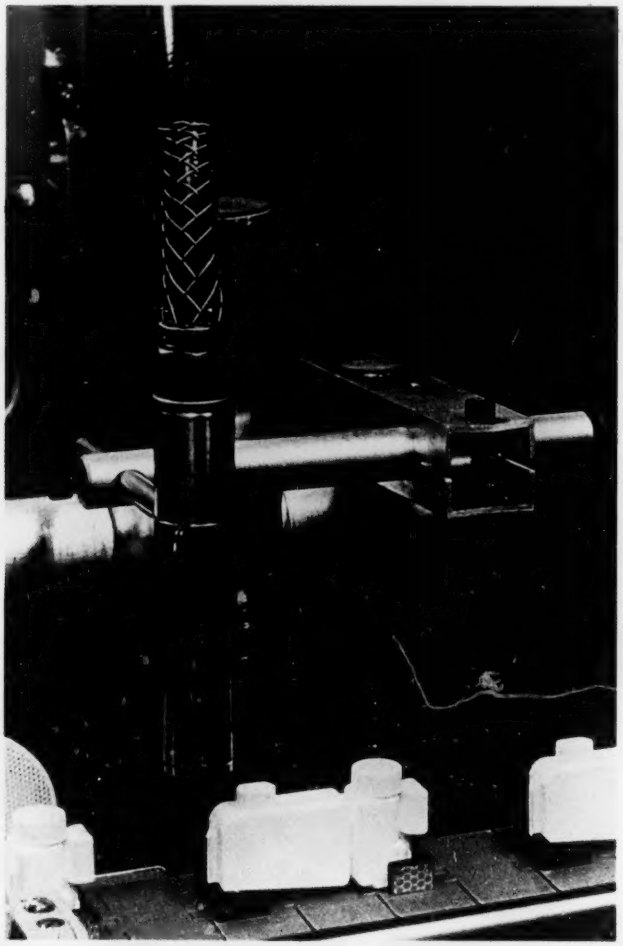
Lidstock and pouch constructions could undergo rapid change in the near future as packagers try various combinations of plastic films, foils and papers. Any attempt to unseat the current lidstock material leader, spun-bonded polyolefin, will need to offer low price and high performance to make a mark in the highly-competitive medical market.

—Melissa Larson

INSTRUMENTS

($millions)

Year	Consumption	Growth
'87	$1,334	—
'88	$1,450	8.7%
'89	$1,508	4.0%
'90	$1,556	3.2%
'91	$1,686	8.4%



Diagnostic reagent cartridge containers are ink-jet printed with contents.

13 Other Industries Buy $13B Of Packaging

OTHER

($millions)

Year	Consumption	Growth
'87	$10,743	—
'88	$11,392	6.0%
'89	$12,296	7.9%
'90	$12,979	5.6%
'91	$13,998	7.8%

It may be scattered, but it adds up to a lot of packaging. While nine industries, from food to scientific and medical instruments, will spend more than $60 billion on packaging, the remaining 13 industries can not be ignored.

Primary materials industries, such as paper, petroleum, rubber, metals, stone, ceramics and glass, and consumer goods manufacturers including apparel, furniture, shoes and other leather goods, sporting goods and toys, collectively will spend nearly $13 billion for packaging in 1990.

Overall, we expect packaging purchases in these 13 industries to grow 5.6 percent in 1990, though the individual growth rates of the different industries vary widely.

Cahners Economics is forecasting slow growth for most primary materials industries, except primary metals.

Our estimates of packaging consumption growth range from a low of 1.8 percent for rubber and miscellaneous plastic products to 8.9 percent for primary metals. Most primary materials packaging growth rates are in the two to four percent range.

One basic material industry that is seeing rather dramatic changes in packaging dynamics is petroleum.

James D. Jones, plant manager, Valvoline Oil Co., Cincinnati, says his industry is seeing a decline in sales of motor oil in quart bottles, "because of the growth of quick-lube franchises." Such establishments receive oil in 500-gallon quantities, directly from tanker trucks.

Jones also foresees the quick-lube phenomenon spurring a move toward returning used oil to refiners for reprocessing or disposal.

At the same time, he speculates that consumers who change their own oil will use refillable containers and return used oil to a service station or other outlet for reprocessing.

These environmental issues are key, in the long run, Jones says, and he even believes it possible resin manufacturers will come up with a material that could melt in with the oil, consuming the package as the product is used.

Some consumer products included in this diverse "Other" category are showing good growth rates, including several that are very packaging intensive.

Growth in spending for toys and games has been strong, fueled by the so-called "Baby Boomlet," the birth-rate increase brought on as the Baby Boom population bubble reaches prime child-bearing years. The growing domination of warehouse toy chains in this market has also raised packaging costs, as rackability and eye-catching graphics become critical merchandising needs.

The sporting goods industry has benefitted from continuing consumer interest in fitness. Here again, chain specialty stores have put a premium on packaging that can help explain and sell the product, increasing packaging costs.

Printing and publishing industries, while not very packaging intensive, have seen strong shipment gains recently, and are forecast to hold their own again in 1990.

Several key consumer goods segments can anticipate a slow year in 1990. The furniture industry has been hurt by the slowdown in new home and office construction. According to Cahners Senior Economist Kim Kennedy, who tracks the furnishings industry for Cahners publications such as *Interior Design* and *Furniture/Today*, growth in sales of business and institutional furnishings was a paltry 2.6 percent in 1989; residential furnishings showed a sales gain of 2.8 percent. Kennedy anticipates continued slowness in 1990.

Despite the slowdown, packaging's profile in the furniture industry is rising, as firms recognize the critical role protection during shipment plays in overall product quality.

"We're seeing more task forces, more interdisciplinary efforts, more breadth of participation throughout the company in packaging-related decision-making," says Thomas J. Lowery, manager, Packaging Laboratory, Ethan Allen Inc., Danbury, Conn.

Lowery believes "the packaging materials are destined to remain the same, but their use and selection are becoming more sophisticated, with emphasis on performance standards rather than mere material standards to predict packaging performance." With more CAD/CAM being employed in furniture design and manufacturing, packaging is being built into the basic design of the product.

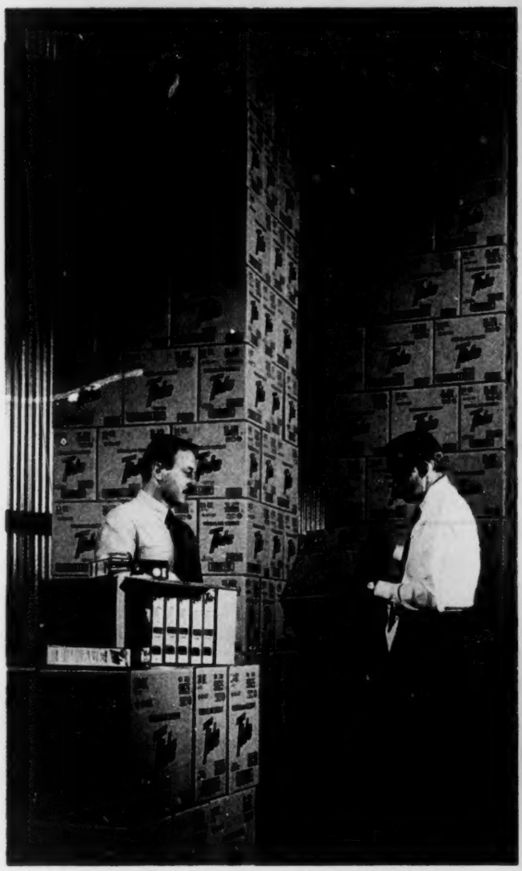
—Bruce Holmgren and Robin Ashton

PLEASE RATE THIS ARTICLE
How would you rate this article? To reply, circle the appropriate number on the reader service card:

Outstanding	480
Above Average	481
Average	482
Below Average	483

Packagers Profit from High-Performance Corrugated

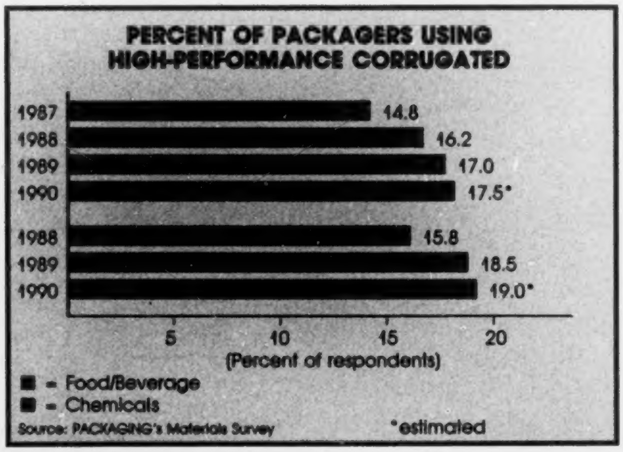
Whether you box motor oil or strawberries, the latest advances in high-strength shippers can directly affect your bottom line



High-compression linerboard corrugated cases help huge towers of detergent stand tall without damage.

By Mark Spaulding
Associate Editor

The word just came in from corporate headquarters. The new warehouse that was supposed to be built on the East Coast next year has been cut out of the budget. That means every available inch of space at your location will have to be used. With limited footage, the only solution is to stack higher.



PERCENT OF PACKAGERS USING HIGH-PERFORMANCE CORRUGATED

Source: PACKAGING's Materials Survey

*estimated

You begin drawing up the necessary plans when the warehouse supervisor calls with still another disaster report. Two entire pallet loads of product were lost when cases on the bottom collapsed. Bottles burst and now the warehouse floor is covered with sticky fruit juice, crushed containers and soggy corrugated.

Although this scenario may sound extreme, it illustrates the increasingly important role of corrugated shipping containers in getting packaged goods safely from the factory to the consumer. According to the Association of Independent Corrugated Converters, 95 percent of all packaged products are shipped in corrugated containers.

How a shipping container performs to protect products from damage all along the distribution chain should not be underestimated. The food industry estimates the cost of damaged merchandise at $2.5 billion a year and growing. Roughly $500 million annually can be attributed to packaging performance.

Conditions changing

The recent developments in high-performance corrugated materials and containers are answering the needs of packagers in all industries. Under today's economic constraints, shippers are being stacked higher and higher in high-density warehouses. Filled cases move from low-humidity conditions at a Northern plant to a high-humidity distribution center in the South. Storage times under these changing conditions are longer, subjecting containers to greater amounts of stress from weight and the environment. To address all these factors, end-users are applying high-performance corrugated's critical element: increased top-to-bottom compression strength in a single-wall case.

Until the introduction of high-performance corrugated, the only way to increase compression strength was to add more fiber, either in the form of thicker linerboards and mediums or by using a multiwall construction. But these methods have economic drawbacks. Not only do the cases cost more initially, they weigh more and take up more room in transport and storage. Distribution costs go up as less product is warehoused in the same amount of space and more weight has to be moved over the road.

Enter high-performance materials and the corrugated cases they become. Suppliers have been experimenting with different methods of producing a stronger shipper while simultaneously reducing the level of paper fiber needed to make a box a box. Each process lends a certain amount of extra strength, and the different methods can be combined in one container.

Cross-linked fibers

Cross-linking is a method of redirecting the wood fibers during paper production. Typically, fiber runs parallel to the machine direction. This makes the fibers go horizontally around the box after the container is formed, the worst direction for achieving a high top-to-bottom compression strength.

Cross-linking, however, forces more of the fiber to run 90° to the machine direction. As one supplier put it, it's as if all the fish in a stream were moving in the same direction. "Cross-linking is getting as many fish as possible to swim sideways," he said. The process results in more fibers running vertically up and down the sides of a case, increasing stacking strength without adding fiber.

The measure of a linerboard's strength under cross-linking is its ability to withstand ring crushing. A half-inch wide strip of linerboard 6 inches long is formed into a ring and subjected to pressure. The number of pounds needed to crush it is the material's ring-crush strength. High-ring liners mated to a high-ring medium maximize the crush resistance of a case's vertical sides and increases the all-important compression strength.

High-pressure forming

High-pressure board forming is another strengthening method performed during the paper manufacturing process. Basically, it involves extending the point of pressure on the paper fibers to more tightly compress them. This creates a denser sheet of material, and the denser the paper the stronger it becomes. High-pressure board forming also tends to squeeze more water out of the pulp, but this is not as important as the end result of a denser linerboard.

Both cross-linking of fibers and high-pressure board forming fall under the category of "papermaking art," according to one supplier who employs both methods. He likens the process to the art of brewing: a combination of technology and technique.

Chemical benefits

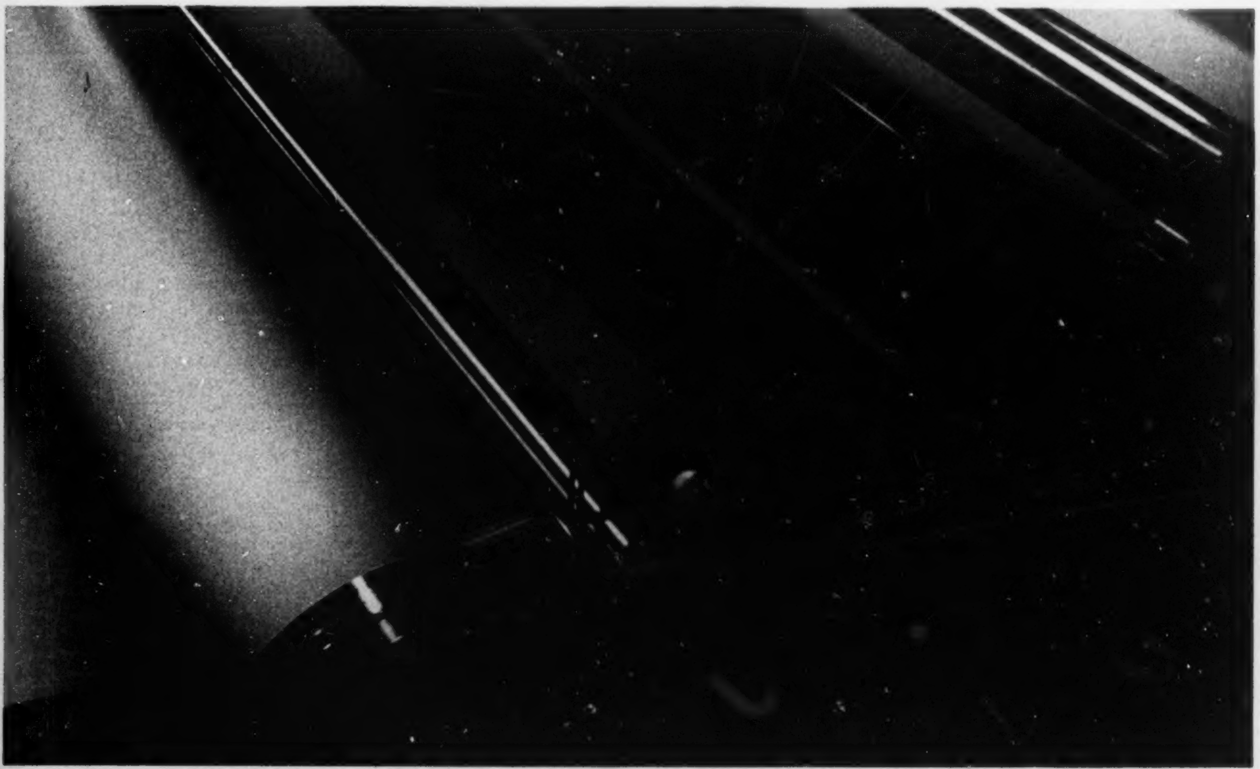
The addition of various chemicals to the fibers—both before and after paper manufacturing—offers a third way to increase the critical compression strength of a corrugated container. These additives serve to enhance fiber bonding and include products such as corn starch, glues, adhesives, PCBs and heavy metals, and plastic- and urea-formaldehyde-based resins. Curtain coating of external chemical sprays are sometimes used to strengthen fibers as well.

Using chemical additives is generally less expensive than cross-linking or other methods. But their usefulness ends where the cost of their application is greater than simply increasing the weight of the linerboard or medium to achieve a stronger box.

Multiple mediums

The fourth major innovation in creating a high-performance corrugated is based on laminating two or more layers of medium together before turning them into a corrugated board. The laminator can be a simple cornstarch adhesive, producing a super-strong medium to be sandwiched between cross-

The papermaking process is a critical stage in the production of high-performance corrugated materials.



Use of super-strong corrugated cases is growing at a healthy pace industrywide

linked, pressure-formed or regular-strength linerboard.

Double-medium corrugated boxes retain a thin single-wall construction, yet can outperform double-wall boxes weighing up to 10 percent more. Double-medium containers also offer greater ring-crush resistance which again improves compression strength and performance when stacking pallet loads three high.

Recyclability questions

An increasingly important concern of packagers using high-performance corrugated is the use of recycled fiber in new containers. Chemical additives such as PVC-based resins make the pulp harder to break down for reuse, and PCBs or heavy-metal additives at the parts-per-million level contaminate the pulping stream.

Most suppliers agree, however, that problems are extremely limited. Difficulty would come, they say, only when the repulper would get truckload after truckload of chemically-modified corrugated to turn back into new boxes on the same day—a highly unlikely occurrence.

Box of Tomorrow

What is the ultimate high-performance case? What can packagers expect of the technology in the coming years? According to some suppliers, the tide of innovation will subside.

"The ability to cross-link more of the paper fibers will not go much farther," said one. "We can expect high-performance corrugated to move forward a litte bit more, perhaps not more than 10 percent better in cost-performance than what's available today."

Some suppliers believe a combination of technologies will be emphasized. "We'll see a combination of options being made available," said another, "adding more emphasis on the overall box design or box styles."

No matter what advances may emerge in the field of high-performance corrugated, packagers are sure to be offered a wider array of options to meet their case-packing—and ultimately, their overall product protection—needs. ■

QUICK REFERENCE CHART: HIGH-PERFORMANCE CORRUGATED CONTAINERS

Information for this chart was compiled from responses to PACKAGING's questionnaire, which was sent to suppliers of corrugated containers. To obtain further information about the products and services offered by the companies listed, circle the corresponding numbers on the reader service card.

			Fiber Recycling		Technology Used to Increase Performance					
Company	Manufacturer	Distributor	Board uses recycled fiber	Board is 100% recyclable	Chemical additives	Cross-linked fibers	High-pressure board forming	Double medium	Other	Circle No.
Boise-Cascade, Corrugated Container Div.	•		•	•			•			501
Chesapeake Packaging, Color-box Div.	•		•	•					E/B cross-flute; Ultra Flute	502
Great Southern Paper Co.	•		•	•		•				503
Green Bay Packaging, Inc.	•		•		•		•		Twin-wire formation	504
Hudson Associates, Inc.		•	•	•		•	•	•		505
Inland Container Corp.	•		•	•	•	•	•	•	Refining; chemistry	506
International Paper	•		•		•	•	•			507
Jefferson Smurfit/Container Corp. of America	•		•	•	•	•		•		508
Menasha Corp.	•		•	•	•	•	•		High-ring liners and medium	510
Nekoosa Packaging	•		•	•		•	•	•	Statistical process control	511
Packaging Corp. of America	•		•	•	•			•	Multi-arch board; semi-chemical mediums; bonding agents	512
Stone Container Corp.	•		•	•		•	•		High-strength medium; A-flute	513
Tharco	•		•				•			514
Union Camp Corp.	•		•	•		•	•			515
Westvaco Corp., Container Div.	•			•		•				516
Weyerhauser Co.	•		•	•		•	•		Fiber selection and refining	517
Willamette Industries, Western Kraft Div.	•		•			•	•	•		518

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Plastic cole-slaw cups are another example of a product in need of a high-performance corrugated case to protect it from crushing.

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Outstanding	466
Above Average	467
Average	468
Below Average	469

MARK SPAULDING
Associate Editor

"The emergence of high-performance corrugated points up the value-added trend in packaging materials in general. The plain brown case is not a commodity anymore."

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Vertical Filling Redefines The Pouch

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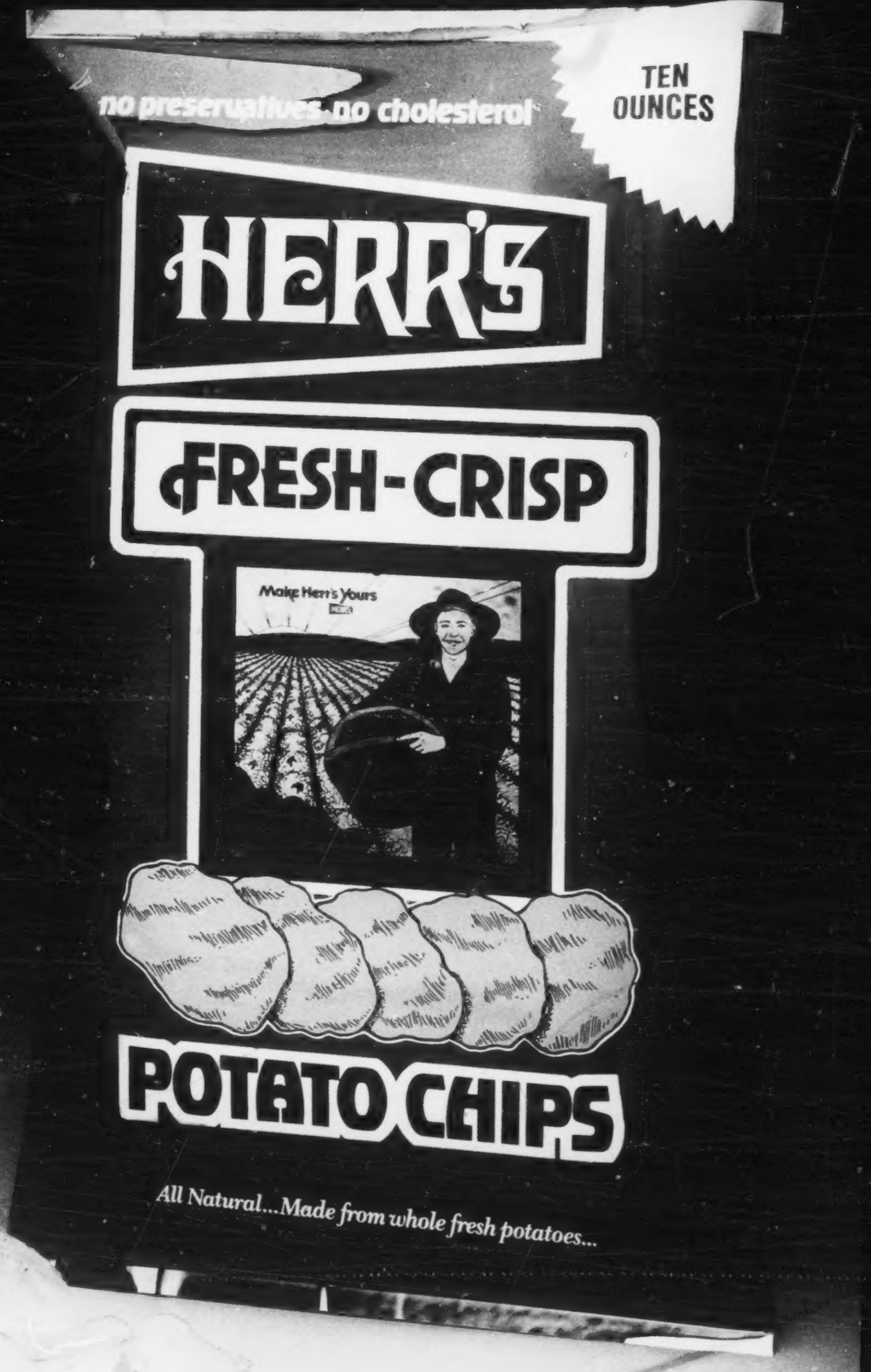
The PI/I-SPHE Merger: What's In It For You?

P&G Tests Downy Refill Package

How To Specify Ovenable Food Trays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PACKAGING.

Hopes for the '90s

Yes, it's a bright new year and a brand-new decade. Editors often take such opportunities to make predictions about the future. Forgive me, but I'll pass. Things move too fast these days for predictions to have much meaning.

I do have hopes, however, for packaging in this last decade of the 20th century. I'd like to share some of them.

I hope, first of all, that Americans will begin to understand—and fully appreciate—the great social and economic benefits of packaging. These range from ensuring food safety and keeping drugs fresh and safe to reducing waste and loss throughout American industry. At present, few average citizens appear to recognize these benefits. It's encumbent on all of us in packaging to help educate them.

I hope that the definition of business success for the 1990s will emphasize productivity, innovation and a focus on long-term growth. The '80s, in contrast, have been characterized as the decade of greed. Personally, I'm sick of speculators, quick-buck artists and other species of financial manipulators raping many of this country's finest companies for personal gain. I think it's time for all of us, as investors, business people, employees and citizens to shout "Enough!"

I hope that we as a nation and as employers can find a way to educate those who will follow us, particularly the least advantaged. I don't need to tell you that the educational system in this country is a disaster. If we don't get it fixed and soon, we might as well resign ourselves to a reduced standard of living. And I hope none of us will accept that.

Finally, all of us at PACKAGING hope you and your families have a healthy, happy and productive year.

Robert Ashton

EDITOR IN CHIEF

On the cover: Herr's new 10-ounce chip bag with hologram by Robert Sherwood Holographic Design, microembossing by Dazzle Enterprises, converted by Printpack Inc. Photos: Craig Cain.

PI/SPHE merge to form IoPP led by Stan Kopecky (left) and President Bill Armstrong. Page **9**

CONVENIENCE
SHELF PRESENCE
MOVE AHEAD.

Choices challenge food packagers. Packaging is being asked to do ever more with some options mutually dexclusive. Page **44**

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Shredded Colby & Monterey Jack Cheeses

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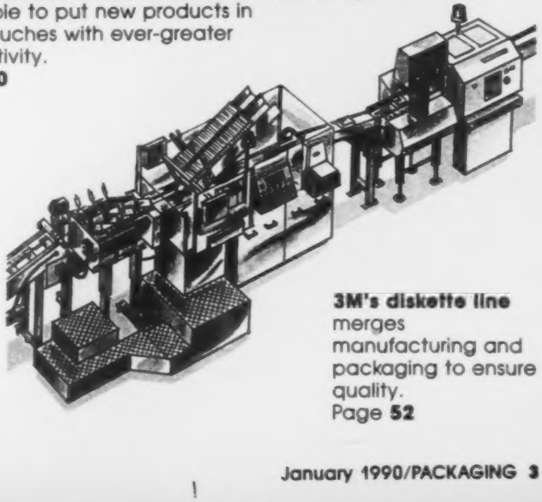

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ENVIRONMENTAL NEWS

Flash: Consumers Like Taxes

Idea favored as means of funding recycling

A new survey by the National Solid Wastes Management Association shows that Americans prefer taxes on packaging as a means of generating revenue for recycling programs.

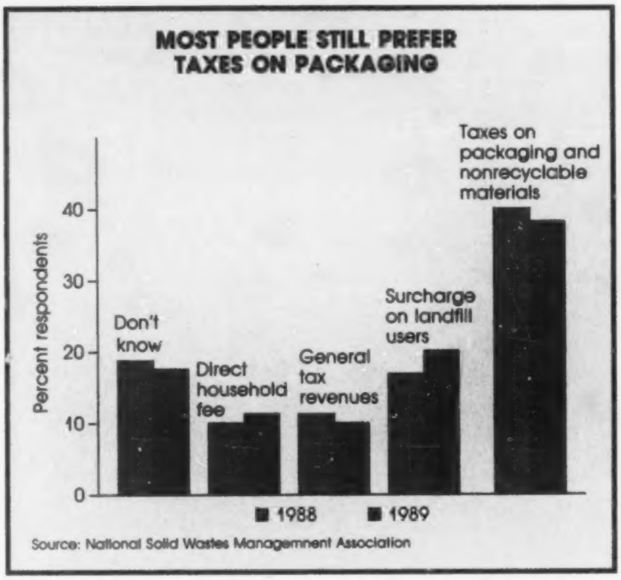
Although the percentage of respondents preferring taxes fell two points since the 1988 survey was conducted, it nevertheless remained nearly twice as high as that for a surcharge on landfill users, the second-most-preferred option.

Other findings:

- More people now favor than oppose the siting of a waste-to-energy plant in their community.
- Public support for the siting of new landfills has increased by nine points, to 29 percent, from a year ago.

The NSWMA's report is a compilation of results of telephone and face-to-face interviews of 3,500 adults in July and August 1989.

For more information, contact the NSWMA, 1730 Rhode Island Ave., Suite 1000, Washington, D.C. 20036.



Source: National Solid Wastes Managemnent Association

Firm Foresees Rise In Recycling

Plastics rate to grow fastest through 1994

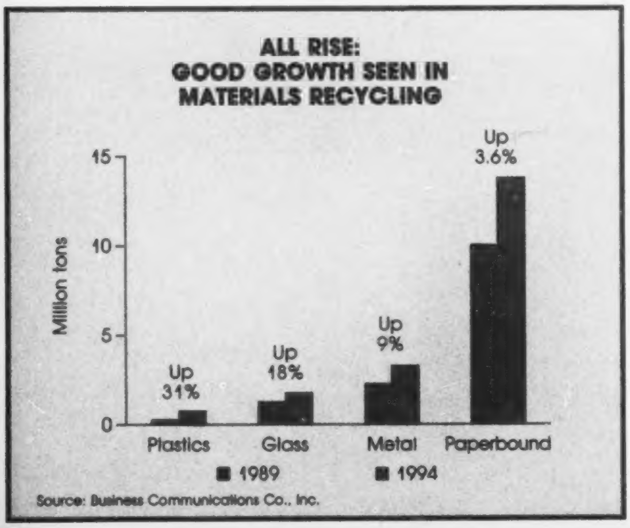
According to a new report from Business Communications Co., Inc., recycling rates for plastics, glass, metal and paperboard will rise significantly between now and 1994.

Although lowest of the four materials in total tonnage recycled, plastics will lead the group in rate of change, rising 31 percent. In comparison, the total amount of paperboard recycled annually is 33 times as great as that of plastics, but the recycling rate for paperboard will rise less than four percent by 1994.

The study notes that recycling could actually become too prevalent for its own good. "The overabundance of collected newsprint, corrugated paperboard and mixed papers, and even PET plastics in some places, has brought about a situation where the materials no longer can be sold and are given away," says the firm.

It adds, "In addition to profitability, developing markets is essential to sustaining faith and credibility in the concept of recycling itself."

For more information on the study, contact Business Communications Co., Inc., 25 Van Zant St., Norwalk, Conn. 06855.



Source: Business Communications Co., Inc.

Reuse Of Co-Ex Sheet 'Feasible'

Companies conclude plastics project

A multi-company research project on the recycling of co-extruded plastic sheet shows the process to be "technically feasible."

Working with American National Can Co., Ball Plastics, Brown Machine, Continental Can, Genesis Packaging Systems, Packaging Resources, Inc., and A. Schulman, Inc., Dow developed a simple desk organizer made in part of mixed multilayer materials.

The middle of the structure, representing about two-thirds of the total amount of plastic used, is made up of PVDC, EVOH, polypropylene, polystyrene and polyethylene. The two outer layers are made of PP. No adhesives were used.

"While this is just the beginning of the efforts by Dow in recycling commingled multilayer scrap," says a Dow spokesperson, "the success of the research and of the test project has given us high confidence in the overall compatibility of Saran resins and other rigid-barrier container components in the recycled waste stream."

Potential applications of similar mixed-plastics co-extrusions, according to Dow, are trash cans, flower pots and various office products.

Tape Touts Role Of Paperboard

Council says cartons offer many benefits

A new videotape on the "user friendliness" and "environmental compatibility" of folding cartons is available from the Paperboard Packaging Council.

Titled "Meshing Packaging Benefits and Solid Waste Management," the 25-minute tape discusses the hierarchy of solid-waste solutions and demonstrates how paperboard packaging fits in.

For more information, contact the Paperboard Packaging Council, Suite 411, 1101 Vermont Ave., Washington, D.C. 20005.

BRIEFS . . .

The Council for Solid Waste Solutions, a program of the Society of the Plastics Industry, says a total of 353 **plastics**-related proposals were introduced in various state and local legislatures during 1989 . . . Bottle supplier Stanpac, Smithville, Ont., Canada, has prepared literature describing the benefits of **returnable/refillable bottles** for use by dairies . . .

PACKAGING

THE CAHNERS MAGAZINE FOR DECISION-MAKERS/FEBRUARY 1990

BEST GLASS PACKAGES

Winners Of The 1990 Clear Choice Awards

How To Work With Outside Designers

What's Available In Shrink-Wrap Machinery

Multipacking Emerges As Key Marketing Tool

Ralston Debuts Cat Feeder Pack

Material Tax Balloon Bursts

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PACKAGING

Phew on this tax

It was just a matter of time, I suppose. Still, the Bush administration's short-lived trial balloon on a packaging materials tax caught everyone in the packaging community by surprise. The balloon was almost immediately shot down, reportedly on the basis that such a tax would violate the administration's "no new taxes" pledge. (For details on the proposal, see senior editor Greg Erickson's report in "Packaging News.")

But don't be lulled: We have it on good authority that the idea came from the highest levels of the White House. We'll be very surprised if this idea doesn't resurface and soon.

And make no mistake: If we end up with a materials tax, packagers would be among the first to foot the bill. If you hate the idea—on a basis of principle, fairness or rank self-interest—you'd better start screaming now.

We're already on record urging an effective (a big qualifier) federal solution to the solid-waste problem. A materials tax could fund such a solution while offering incentives for use of recycled materials. But we have serious problems with the proposal as it was described in *The Wall Street Journal* Jan. 3.

First, it appears to single out packaging. That's not fair. It significantly limits the tax's effectiveness as an incentive for American industries to use recycled materials, since packaging makes up only a third of municipal solid waste.

Second, a flat per-ton tax applied equally for all materials appears to create an uneven playing field. Some materials are denser than others. While this is a complex issue, any materials tax must be materials neutral.

Not least, somebody had better examine the inflationary impact of such a tax. We did a simple calculation: At $20 a ton, the tax would be a penny a pound. If a plastic resin sells for 50 cents a pound, that's 2 percent. Push that out through the economy and see what happens.

A materials tax would have to be a lot fairer and a lot more carefully thought out before we would even consider the idea.

Robin Ashton

EDITOR IN CHIEF

E.D. Smith
Strawberry Fraises
E.D. Smith
Blueberry Bleuets
H2Oh!
H2O

On the cover:
E.D. Smith's preserve line; jars by Consumers Glass. Photo: Loring Nelson-Curry

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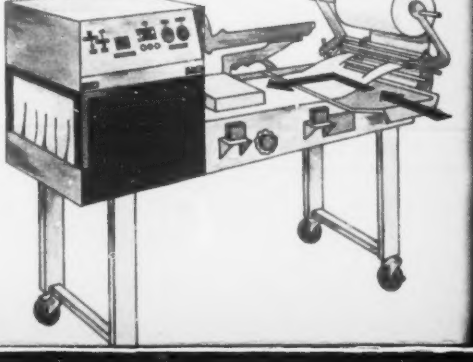

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Hype Can Be A Hazard

Pro-environment claims raise concern

Speaking to the recent annual retreat of the Council on Plastics and Packaging in the Environment, pollster Anthony M. Casale said, "in terms of pure marketing hype, the environment may be to the '90s what cholesterol was to the late '80s. . . . "

According to Casale, vice president and general manager of the Gordon Black public opinion research firm, growing consumer concern for the environment "has come to the attention of a lot of people with dollar signs in their eyes. A growing number of companies are already adding environmental promotion programs as part of their marketing campaigns."

Casale warned COPPE members that that might not always be wise. "What we have found is that people are very confused over the entire issue. . . . Most adults clearly don't understand . . . terms like 'recyclable' and 'degradable' and what they mean. And they have no clear-cut image to go along with the phrase 'environmentally friendly.' "

Here's one example of how confusing those terms can be: A paper developed by Goodyear's Polyester Div. contends that the question should not be "Is this product recyclable?" but "Will this product be recycled?"

The paper, presented recently to the Society of Plastics Engineering Regional Technical Conference, states that all products are potentially recyclable. It adds, however, that many recyclable products may never become recycled products.

The legal ramifications are worth considering: The attorneys general of seven states have been scrutinizing use of terms such as "recyclable" and "degradable" by companies that have seen marketing potential in the so-called green movement.

Already, some companies may be wishing they had never labeled their plastic products degradable. A half-dozen national environmental groups have begun campaigning for a consumer boycott of "degradable-plastic" products. At a press conference last December, the Environmantal Defense Fund, the Environmental Action Foundation and four similar groups called degradable plastics a "rip-off" and a "hoax." Together the groups intend to mail anti-degradables information kits to hundreds of thousands of consumers.

If there is a moral to this story, it's "Look before you leap."

Government's Role Seen Growing

Poll shows that packagers expect big changes

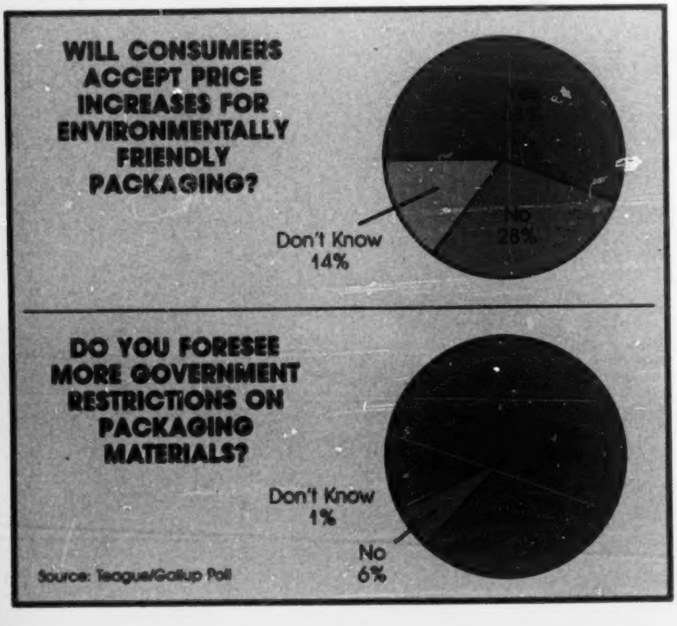
Public awareness of environmental problems is having a significant impact on packaging, according to a new Gallup Organization survey of packaging decision-makers.

Commissioned by Walter Dorwin Teague Associates, Inc., a New York City design firm, Gallup randomly surveyed 100 packaging professionals from leading consumer-product companies.

Here are some of the findings:

- Nearly all the respondents said they believed that government restrictions on packaging would increase from present levels.
- Two-thirds of the respondents said they felt growing consumer concern for the environment had affected their industry.
- More than half said they believed consumers would accept price increases in order to obtain products that they could think of as environmentally friendly.
- Nearly half said they had changed some of their packaging to make it more environmentally friendly.
- Of the respondents who said they had not changed their packaging, 28 percent reported planning to do so in the future.

For more information, contact Lobsenz-Stevens, Inc., Public Relations, 460 Park Ave. South, New York, N.Y. 10016.



Source: Teague/Gallup Poll

New Company Reclaims PET, HDPE

The goal is to make new bottles from old ones

Right about now, Clean Tech's HDPE and PET recycling facility in Dundee, Mich., should be up and running.

Working with The Procter & Gamble Co. and Plastipak Packaging, Clean Tech plans to process old bottles into reworkable plastic. From there the plastic will go to Plastipak in nearby Plymouth to be made into new bottles of the types used by P&G in packaging several liquid cleaning products.

Projections call for the Clean Tech plant to process 12 million pounds of plastic during its first year of operation and double that amount in the second year. Three-fourths of the material will be HDPE; the rest, PET.

According to Thomas Busard of Clean Tech, the new company will work in partnership with communities, civic groups, corporations and collection facilities to remove post-consumer bottles from the waste stream. Busard said, "We hope to make a significant impact on how some plastic products are discarded. Many that would have taken up precious space in our landfills will now be recycled."

Detinner To Build Huge Can Facility

World's largest plant will open this summer

AMG Resources Corp., a leader in the steel-can detinning business, has announced plans to construct a huge can-recycling facility in St. Paul, Minn. Having an initial capacity of 40,000 tons a year, the plant is expected to be operational by summertime.

The plant will accept steel cans from the surrounding five-county area as well as from incinerator operators.

After detinning, the steel will be shipped to mills and foundries; the tin will be marketed to chemical and pharmaceuticals industries.

BRIEFS . . .

The Executive Board of the Council for Solid Waste Solutions has approved a $13.2 million, 12-month program promoting the environmentally sound disposal and recycling of plastic products . . . Twinpak PET (Quebec) Inc., a joint venture between Twinpak Inc. of Montreal and 15 Quebec soft-drink bottlers, has announced plans to invest another $8 million in its present **PET-recycling** operation, doubling output . . . Huntsman Chemical Corp.'s **polystyrene** facility recently won Keep America Beautiful's 1989 National Recycling Award for reclaiming 2.5 million pounds of polystyrene scrap . . .

Multipacking: Who Benefits?

Multipacking moves product in warehouse clubs and pops as a promotion—but does that make it a new retail trend?

By Melissa Larson
Senior Editor

Six-packs of canned vegetables, usually for sale in warehouse clubs, are one of the most popular types of multipacks.

Assume you're marketing canned vegetables. Canned goods sales are flat. You're taking a pounding from the fancy frozen-vegetable guys. What do you do?

According to the Can Manufacturers Institute, you offer six cans of product, either of the same or different varieties, in a plastic six-pack carrier. The consumer buys six cans of vegetables, or soup, or pet food, instead of just three or four.

CMI asserts that the multipack concept has boosted canned food sales just as it once did for canned soft drinks, and that many consumers like the concept of buying in bulk at a discount. They say consumer research proves consumers would buy more can multipacks—if they were available.

But does this point to a multipack trend? Would consumers like to buy their facial tissues, shampoo, diapers and snacks in shrink-wrapped groups of four, six-packs of cans and paperboard-wrapped multiples?

Suppliers of the machinery to produce the multipacks perhaps have the most at stake in the answer, but other inquiring minds—like supermarket executives—want to know whether multipacking is a long-term retail trend.

The answer may also have some interesting implications for food and personal-care retailing in the 1990s.

Consumer groundswell?

So far, multipacks of canned food are rarely seen outside of food clubs or warehouse stores. But that will change, says CMI, as traditional supermarket chains feel more competitive heat from warehouse clubs and realize the consumer demand for multipacks.

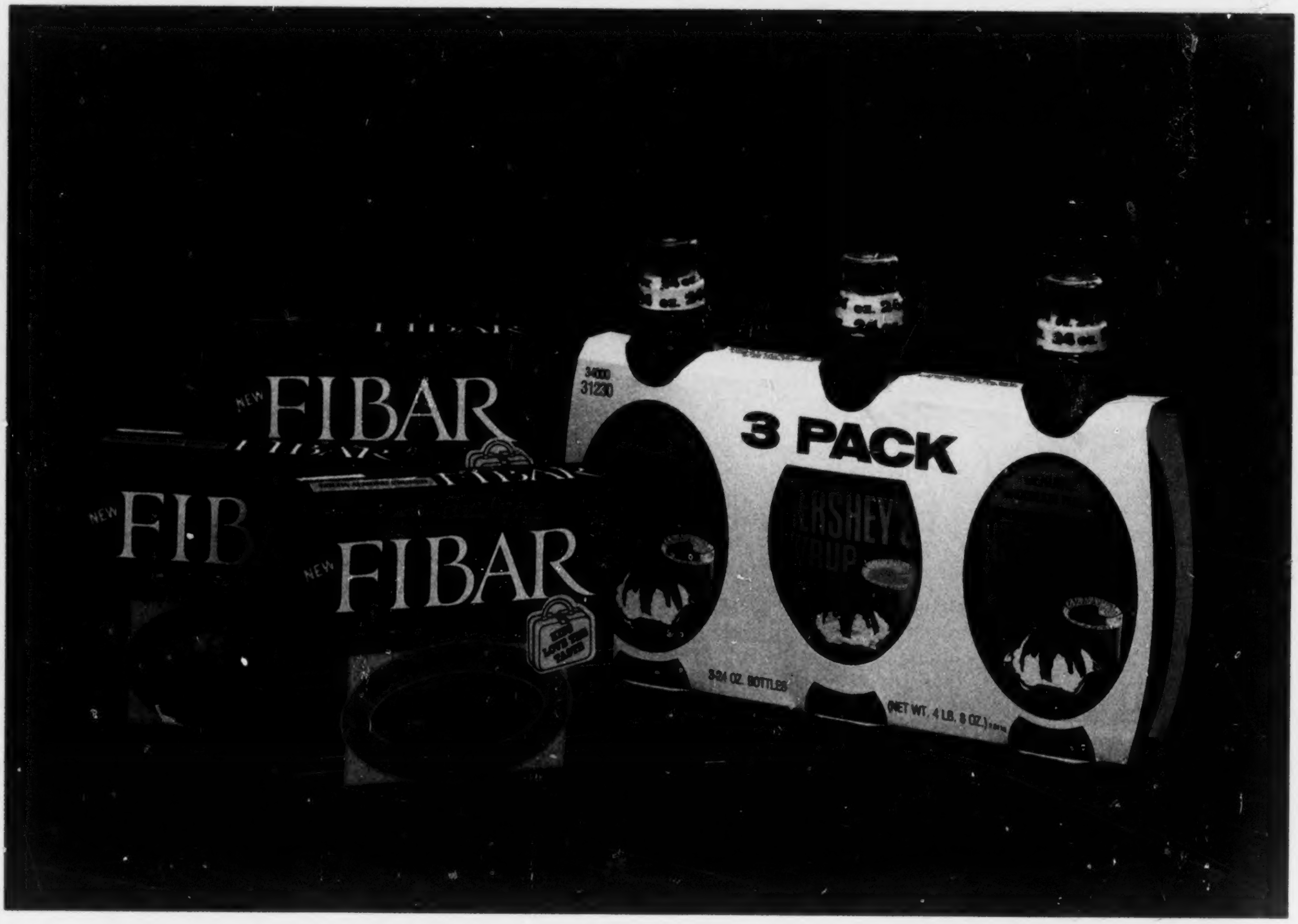
A recently released consumer survey by Elrick & Lavidge, Inc., commissioned by CMI, seems to indicate that shoppers would buy more multipacks of cans if they were available. Canned pet food, canned soup and canned vegetables were the products the study focused on, based on regularity of consumer purchases of these items.

What do consumers like about can multipacks? Carrying and handling ease, price discounts and variety options, according to the study. Concerns they expressed included inability to select the flavors in a variety multipack, and concern that they didn't consume enough product to warrant a multipack purchase.

It's precisely the issues of consumption and choice that are at the heart of chain supermarket executives' reluctance to jump on the multipack bandwagon.

"Who did they poll? Survivalists?" snapped one supermarket spokesperson. "Trying to get the consumer to purchase more product than they want or need is not what we're in business to do. Unless shoppers are interested in stockpiling food, which is a trend I'm not aware of, it's just limiting their choices, not adding to them. There is only so much shelf space."

"It's freedom of choice, both in brands and in quantities, that's attractive to our customers," said another chain executive. "Why would we want to, in effect, tell them how much to buy of a certain item? That's why we



Warehouse clubs also stock some snack items, such as these multi-variety snack bars, shown here without their original shrink wrap. Other popular food product multipacks include this die-cut paperboard carrier for three 24-ounce bottles of chocolate syrup.

discontinued packaged produce. We see it as a disadvantage to the consumer."

Warehouse buying

There's no question that warehouse clubs are growing, and selling lots of product—most of it multipacked or jumbo-sized. The popularity of items packaged this way in warehouse environments is the most often cited incentive for offering such items in supermarkets.

From their inception in the early 1980s, warehouse clubs have generated steady increases in sales volume. The statistics tell the story: $8 billion in sales in 1986, $11.8 billion in 1987, $13.9 billion in 1988 and an estimated $16.9 billion in sales for 1989, according to *Discount Store News*, which tracks the warehouse club market.

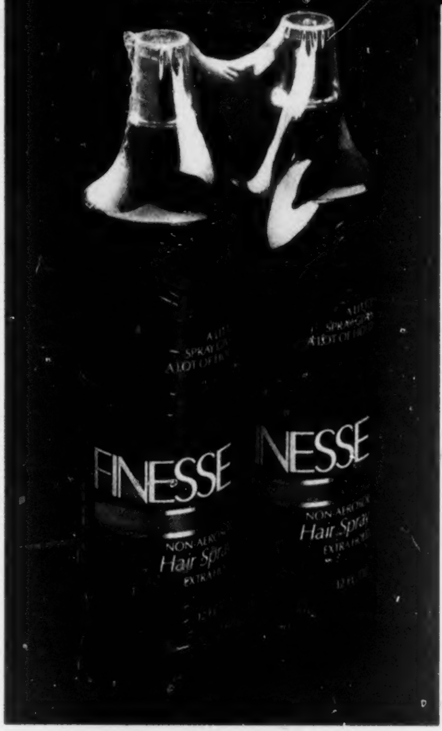
Although a recent shakeout has reduced the number of major players from 25 to about eight, these major chains have the system down to a science. Minimum store size is 100,000 square feet, and margins are razor-thin—about 10 percent, compared to the high teens for most supermarket chains. They depend on fast turnover to, in effect, sell the merchandise before having to pay the vendor companies.

However, if you've ever shopped a warehouse store, you know there's a lot more for sale than food and toiletries. Pet food is stacked next to power tools. Children's toys and clothes are just across the aisle from computers, office copiers and furniture.

There's another key component of the warehouse club system which few realize. The most successful warehouse clubs do at least 50 percent of their business with other companies—restaurants, small offices, etc.—rather than consumers. In effect, they use a retail approach to wholesaling.

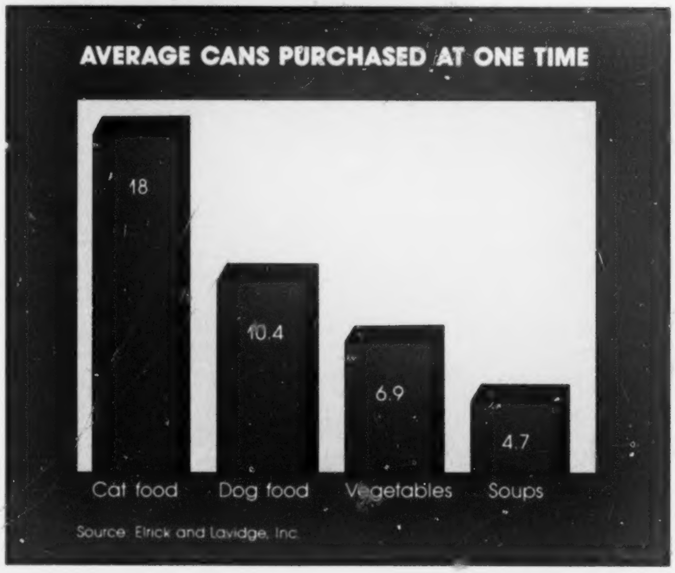
"Warehouse clubs are not dependent on consumers, but on other businesses," says Don Longo, executive editor of *Discount Store News*. "In effect, they're competing not with chain supermarkets, but with food wholesalers and restaurant supply houses. Selling multipacks of food to individual consumers is often a very small part of their business. Warehouse clubs and supermarkets really don't compete with each other."

Therefore, it's unlikely that supermarkets are feeling



Personal-care items can also be found bundled. These tissues carry a pressure-sensitive label (not shown) identifying them as a "Bundle-Pack."

This shrink-wrapped two-pack of shampoo could be suitable either for warehouse retailing, or as a short-term promotion in a supermarket.



Source: Elrick and Lavidge, Inc.

Today's supermarket retailer can force the packager to play his game

very much pressure from the warehouse clubs to offer multipacks.

However, they may be facing pressure from major canners and other food packagers who have invested in the capital equipment for multipacking for warehouse clubs, and now wish to get full use of the machinery by extending their markets for multipacks to their chain customers.

Food canners even have a partner willing to help subsidize the equipment purchases. The Can Manufacturers Institute, made up of the nation's metal can producers, is offering a program it calls "Canpack."

Qualifying food canners earn credits toward the purchase of multipack materials and equipment—by increasing their purchases of metal cans for vegetables, pet food or soup by "specified amounts" during 1990. A similar program was offered to soft-drink canners in 1985, generated $5 million in credits toward multipacking equipment, and is widely credited with helping revive the can market for soft drinks.

Other packagers will probably find themselves footing their own bills for multipacking. This type of packaging is expensive, both in terms of extra material costs and in labor to add the multipack feature. Firms which do not have multipacking equipment usually have their multipacks contract-packed or apply the multipack feature in-house, by hand.

Chain clout

Food and personal-care marketers looking to convince their supermarket customers to stock multipacks may find the timing couldn't be worse. Shelf-space is dwindling and so is supermarket buyers' patience when it comes to disruptive new product introductions.

Moreover, even CMI admits that supermarkets traditionally have been reluctant to stock single cans and multipacks of the same product.

And the supermarket retailer has the clout and the weapons to force the packager to play his game. Today's chain buyer is a hard-nosed bargainer interested in sharing in the profits of any new product introduction, and ill-disposed to take on products not sufficiently test-marketed and consumer-proven.

Slotting allowances, product performance reviews after as little as 90 days, and so-called "failure fees" are the new rules of the game. The balance of power, say virtually all observers of the supermarket distribution system, has shifted permanently from the product supplier to the retailer.

Therefore it will be incumbent upon packagers interested in multipacking to convince not only the consumer, but the retailer, that such offers are practical in the supermarket. Otherwise, they seem destined to remain short-term shrink-banded promotions or warehouse club commodities. ■

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Above Average	457
Average	458
Below Average	459

MELISSA LARSON
Senior Editor

"The efforts of the Can Manufacturers Institute have indeed borne fruit for its constituency—and the group has put its money behind the effort as well. However, each packager must make an independent decision on multipacking, based on real economic factors."

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PACKAGING®

THE CAHNERS MAGAZINE FOR DECISION-MAKERS/APRIL 1990

PAPERBOARD CREATIVITY

New Finishes And Folds Expand Carton Options

Eastpack/Interphex Show Preview

Special Show New Product Marketplace

Clever Packaging Boosts Men's Hair-Care Products

Reversing Conveyor Smooths Flow For Chocolate Maker

Basic Facts On Capping Machinery

MY LIGHT
Panasonic
que Krypton Bulb out-performs old-fashioned flashlight bulbs.
Space Age plastic case stands up to years of rugged use.
Switch carries a lifetime guarantee.
Ideal gift for friends, family or yourself. A must for home, car or boat.
Designed to provide a sure grip and maximum light focus.
Batteries not included.
•BRIGHT IDEAS•
"WIN IN A FLASH" SWEEPSTAKES
Over $6,000 of Great Panasonic Prizes
Entry form inside
The Little Engine That Could

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High-Tech Leads To High Fashion

Or is it the other way around? No matter. Everyone involved in paperboard is boosting creativity

By Greg Erickson
Senior Editor

The Light
Panasonic
MY LIGHT
Panasonic

Peggable carton for a new flashlight borrows its shape from plastic clamshells, features flashy graphics.

One paperboard-carton professional sums up recent changes in his business like so: "This is a fashion industry."

Says another, "Everyone seems to want something new and unique. Marketing departments are fueling something novel to catch the customer's eye."

New computer-aided design systems are leading to intricate configurations. High-speed die-cutting equipment is producing cartons that were mere daydreams just a few years ago. Computer-controlled adhesive applicators are simplifying gluing sequences, making complicated packages economical.

High-fashion in cartons also involves sophisticated printing, embossing and high-sheen finishes. Says a spokesperson for the National Paperbox & Packaging Association, "Twenty years ago a typical order was for a one-color or two-color folding carton. Today it is very common to have six, seven or even eight colors with aqueous or plastic coating."

Consider just a few of the cartons displayed recently during the NP&PA's 40th Annual Packaging Competition.

The one used for Meriden cologne from Scarborough and Co. is printed in four colors with an overall gloss coating and spot-printed matte coating. As if that weren't enough, it is further adorned with stamped gold foil.

Million Stars perfume by Parfum de Coeur features two impressions of dark blue ink, hot stampings of gold and silver (the stars, of course) and a topcoat of plastic film.

The new carton for Formula 44 cough syrup from Richardson Vicks uses advanced printing technology to help prevent what could be called package counterfeiting. Decorated in a highly complex manner—eight colors on the outside and one on the inside—it discourages generic copycats.

Shining examples

In vogue throughout the folding-carton business for all kinds of products from candy to sunglasses is eye-catching high gloss. Most common are coatings that utilize ultraviolet, or UV, curing. Also growing in use are electron-beam curing systems. The Budget Gourmet frozen-entree carton, for instance, makes use of an EB-cured coating to boost shelf presence.

Another shining example is the revamped carton used by Vipont Pharmaceuticals for Viadent toothpaste. Previously, the graphics were printed by web gravure on acetate, which was then laminated to the solid bleached sulfate. Recently Vipont moved to sheet-fed offset printing and UV coating. (Also interesting about the Viadent carton is the perforated panel made to be torn away for use as an instantly redeemable coupon.)

Handling all these slippery little devils presents challenges to manufacturers of cartoning machinery. "There are some really sensitive requirements about marring

FORMULA 44D
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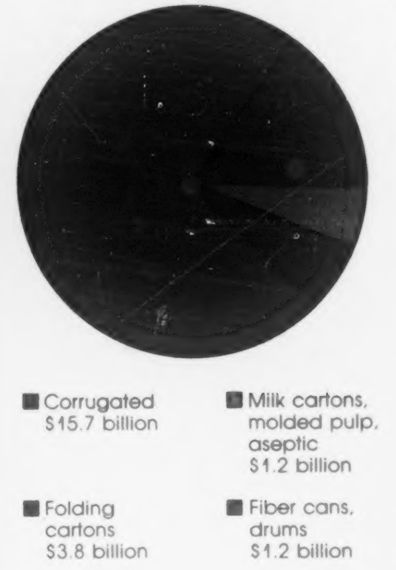
Clean & Clear
Viadent
Save 50¢ Now!
Snaplets-FR

Colorful, intricate, glossy are apt descriptions for today's folding cartons, including these for pharmaceuticals and personal-care products.

PAPERBOARD PACKAGING SALES HIT $22 BILLION IN 1989



Source: Kline and Co.

the package during the filling process," says one machinery supplier. "We have had to go to great lengths in designing rails and such to avoid scuffing." In addition, since hotmelt adhesive doesn't stick well to the glossy coatings, glue must be applied with great accuracy.

Adhesive changes are occurring also in microwavable cartons. At present, trays of the type used for Budget Gourmet need flanges because traditional sealing methods don't work effectively for paperboard coated with polypropylene or polyester. Flanges allow the cartons to be crimped for a secure seal. New work with cold-vinyl adhesives and fine-mist application techniques may open the door to flangeless microwavable cartons.

Tuck-end cartons are diminishing in popularity as glue-end cartons grow. The main reason is tamper evidence. "We're seeing that throughout almost everything that goes into the supermarket," says an executive with a machinery manufacturer.

All the rage

Custom cartons are in big demand. To handle a unique carton, though, you may need a unique machine. Says a machinery maker, "A manufacturer like us has to be a custom-engineering company."

Often, such a custom-designed machine is dedicated to a single package. The more unusual the shape of the package, the more difficult is changeover.

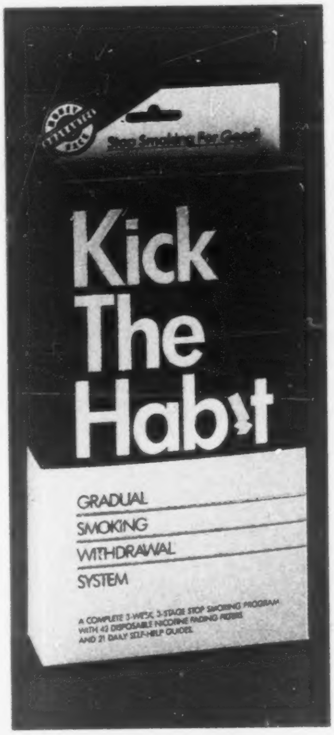
For cartons that are more or less standard in size and shape, changeover from one type of carton to another can take as little as 15 minutes or as much as two hours. Need for fast changeover seems to fall as packaging volume rises. As one machinery supplier puts it, "Even two hours for changeover isn't a big deal if the cartoner has been running one carton for a month."

Says another machinery executive, "Theoretically, there's interest in changeover, chiefly in the pharmaceuticals market. There it's common to have short runs of specialized products. But the other markets are becoming more dedicated: More and more products have a big enough demand that they run just one product on the line on a regular basis."

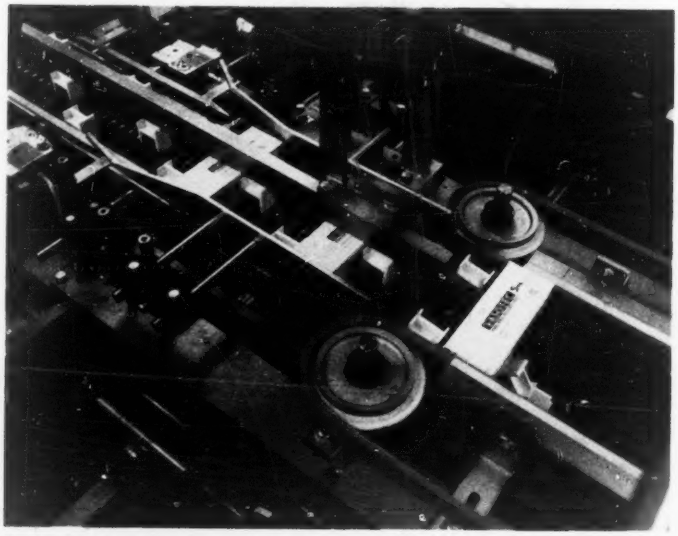
Speed vs. simplicity

Although cartoning machines have not changed dramatically in recent years, they are increasing in speed. A machinery maker says, "The fastest cartons we have ever done were those little single-serve raisin cartons. We did them at 1,200 a minute."

At the same time, though, there seems to be a move toward increased simplicity. "Machines today are capable of being equipped with computers that can be expanded into logic-control systems," says a spokesperson for a machinery company. "But I'm seeing disinterest in that from a lot of packagers. They would rather get back to a



Embossing and gold foil catch the consumer's eye and help make this $30 stop-smoking kit a big seller. The company says the product remains sold out in most markets.



Speedy changeover, always a benefit, is a relative term: Even two hours is not excessive if the line runs a single carton for lengthy periods.

simplified machine that their workers feel comfortable with." The spokesperson says his company has produced a couple of extremely simple, non-computerized machines and is finding a good market for them. "People know they can go out and get components for them readily," he adds.

Also, according to a machinery maker who says his company sells six to 10 times more continuous-motion cartoning machines than intermittent-motion models, "The most difficult cartons may be handled best by an intermittent machine."

For some packagers, more than one medium-speed machine may prove better than a single fast model. A machinery maker explains: "If you have one dedicated line and a total output of 400 to 500 units per minute, you won't find a wrapper that will wrap anything that fast. So instead of one cartoner that can run at 400 a minute, maybe it would be best to put in two cartoners with a top speed of 250 units per minute each. You would spend more for those two machines than for a single high-speed machine, but if one of the two machines goes completely down, you can still get product out the door."

One last fashion note

Clothing that's in style one year can easily fall from favor the next, especially if it seems too showy for newly conservative times. The same could prove true for folding cartons.

"With concern for the environment rising," says a supplier of folding cartons, "a lot of designers have a great deal of concern about overpackaging."

However, if a carton presents an opportunity to provide thorough product information, boost shelf presence and raise product protection, it could very well prove worthwhile, despite the nasty looks it might get from critics of packaging. ■

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Above Average	447
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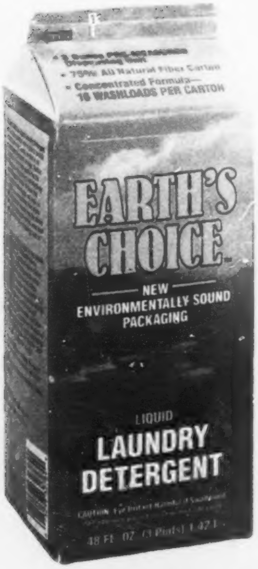
Below Average	449

GREG ERICKSON
Senior Editor
"This being a fashion industry, it's no wonder that cartons really strut their stuff when the product is perfume. Fragrance makers seem to be sparing no expense in their use of paperboard."

GABLE-TOP HOLDS DETERGENT FOR SIX MONTHS



Inside the gable-top is a device that lets users measure 3 ounces of detergent by tipping the carton part way.

Looking a lot like the gable-top carton on the cover of PACKAGING's August 1989 issue is a new package introduced by detergent maker Brittco. The make-believe carton that introduced our special environment issue and Brittco's brand-new "environmentally sound packaging" feature nearly identical landscapes, complete with mountain peaks and blue skies.

A message on the gable-top used for Earth's Choice liquid detergent reads, "The supplier of this carton is a leading paper manufacturer who is . . . concerned with our environment."

A press release from the carton manufacturer, however, includes no mention of environmental benefits. Instead, it discusses how packagers of detergents, lubricants and and other hard-to-contain liquids can reduce costs by using paperboard.

In this case, there's much more than paperboard involved. In order to contain its highly aggressive detergent, Brittco chose a carton incorporating paper, foil and polyethylene as the product-contact layer. These materials, and a configuration that eliminates raw interior edges, give the package a shelf life of at least six months.

Adhered to the interior of the carton is a device that enables the consumer to measure out 3 ounces of detergent by just tipping the carton part way.

C,850-1

PACKAGING

THE CAHNERS MAGAZINE FOR DECISION-MAKERS/MAY 1990

IT'S IN THE BAG

Foodservice Pushes Packagers To Flexibles

How To Boost Your Labeling Speeds

Sterile Solution Line Solves Transfer Problem

Worldstars Showcase Unique Packaging

Sample Piggybacks On Shaving Gel

How To Specify Polyethylenes

FRESH CUT
HAWAIIAN PINEAPPLE
NO ADDITIVE
NO ARTIFIC
Del Monte
UNDS
DO NOT FREEZE
BEST IF USED BY
24
Pineapple Raisin Cake
Pineapple Date-Nut Bread
Baked Pineapple Pudding

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PACKAGING NEWS

Machinery Sales To Hold Their Own In 1990

But price becomes more important buying factor

Packaging machinery buyers remain optimistic in the face of uncertain economic conditions for the balance of 1990. Buying trends are stable—but price has become more a factor.

More than 1,300 packaging professionals, involved in the packaging of food, drugs and a variety of other products, responded to PACKAGING's annual Equipment Survey early this year.

For the first time, we polled packaging professionals involved in SICs 34 (Fabricated Metal Products), 35 (Non-electrical Machinery), 36 (Electrical and Electronic Equipment) and 38 (Instruments and Related Products), as well as SICs 20 (Food and Kindred Products) and 28 (Chemicals and Allied Products).

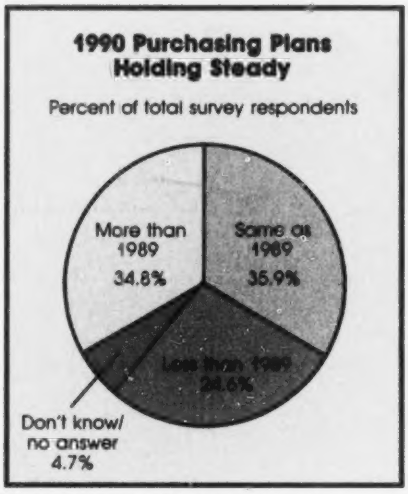
While more than 70% of the responses still came from packagers involved in food and diverse chemical packaging, we also received input from professionals involved in buying machinery for packaging of items as diverse as computers, motors, appliances, medical devices, typewriters and fasteners.

PACKAGING editors will be drawing on the information from this survey for several upcoming articles. However, here is a synopsis of the most relevant findings as they relate to machinery buying trends.

A third will spend more

Managers who responded to our survey authorize, specify or determine the need for new packaging machinery. And 34.8% of them said they expect their companies to spend more on equipment in 1990 than they did in 1989. Another 35.9% expected the expenditure for 1990 to be about the same as it was in 1989, and 24.6% predicted that their companies would spend less money on new packaging equipment this year than last.

How does that translate to actual purchasing dollars? Although 7% of respondents said they plan to spend nothing at all on machinery in 1990, and more than 28% said they'll spend less than $25,000 this year, another another 22% plan to spend from $25,000 to $99,999. A healthy 21% said they will purchase between $100,000 and $499,999 worth of packaging machinery in 1990. And 12% will spend big—more than $500,000 this year.


1990 Purchasing Plans Holding Steady

Percent of total survey respondents

More than one-third of packaging professionals responding to PACKAGING's annual equipment survey say they plan to spend more on packaging machinery in 1990 than they did in 1989.

PRICE IS INCREASINGLY IMPORTANT

1990 Rank		1989 Rank
1.	Simplicity of changeover	1.
2.	Cleans without disassembly	2.
3.	Maximum speed	3.
4.	Handles wide range of materials/containers	6.
5.	**Price**	**10.**
6.	Extra guarding for safety	4.
7.	Cleanup/changeover without tools	5.
8.	Built-in programmable controllers	9.
9.	Diagnostic panel lights & alphanumeric displays	7.
10.	Open construction for accessability	8.

Price of a piece of machinery is more important to potential buyers of packaging equipment this year than last. While high performance is still paramount, cost concerns are creeping in.

Changeover ease most important

The survey asked packagers to rank the machinery features and attributes that are most important to them when they consider the purchase of a piece of machinery.

The top three in this year's ranking are unchanged: "Simplicity of changeover" again ranked as the most important feature with potential machinery buyers. Next came "cleans without disassembly," followed by "maximum speed." These are also unchanged from last year's survey.

However, the price of the machine is far more important to this year's respondents than it was just one year ago. "Price" jumped from No. 10 in last year's ranking to No. 5 this year. It appears that while flexibility and high performance are still of paramount importance to buyers, these professionals are also being forced to consider initial cost more carefully than before.

Rounding out the top five in this year's survey was "handles wide range of materials/containers," which jumped to No. 4 from No. 6 last year.

Bring me a bar coder

Equipment to code, mark or label a package will be among the items on many packagers' machinery wish lists this year. Leading that list is bar coding and scanning equipment, with 16.4% of respondents planning to purchase such a unit in the next year.

Exactly 15% said they will purchase a labeler within the next 12 months. Another 16% will buy an ink-jet printer in the next year, and 14.7% said they will purchase an unspecified type of coder.

Respondents were asked to reflect not only on past and projected machinery purchases, but also on electronic control, reporting and management information systems that boost line efficiency.

When asked whether any or all of their packaging lines or operations were tied in to a plant-wide or company-wide management information system, more than 15% said yes. Some 68% tie in individual machines to such a system, while 48% said they tied groups of machines on a line to an MIS system. Half said they tie one or more entire lines to the system.

Even those companies that haven't yet instituted management information systems are thinking about doing so. Of those that are not yet tied into a system, almost 12% said they plan to do so within the next 12 months. And, with or without such a system, almost 40% of respondents said they use some sort of electronic production data reporting system.

—Melissa Larson

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PACKAGING

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EXCLUSIVE CONSUMER SURVEY

Annual Study Confirms Kid-Pack Trend

Use Of Single Serve, Shelf Stable Rises

Efficient Line Lets Packager Compete

The Latest Trends In Drug Packaging

Basic Review Of Carded-Blister Machinery

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FINDINGS...

Over 20% of respondents indicate they planned to use more **single-serve** food containers in 1990 than they did in 1989.

More than 89% of those surveyed checked for a **code/expiration date** on a package before purchasing.

Over 19% experienced **off-flavors** or off-aromas, attributable to the packaging, in the past year.

More than 87% checked for **evidence of tampering** the last time they purchased a food or drug product.

Another 45% avoided such a purchase, because the package appeared to have been **tampered** with, in the last six months.

Almost 30% said **recyclability** "often" affected their purchasing decision.

More than 52% of those surveyed said that **steel is "difficult to recycle."**

Almost 18% of respondents said that **75% or more** of the trash they discarded was made up of packaging.

EXCLUSIVE
PACKAGING SURVEY

Consumers Determine Package Success

Kids zapping their own dinners. Ambivalence over plastic packaging. These are among the new consumer realities revealed in PACKAGING's exclusive annual survey

By Melissa Larson
Senior Editor

When the moment of truth arrives and a shopper is approaching your package, remember that consumers' "internal" trends are a powerful influence on the choices they make.

Demographically speaking, singles become couples when they marry. They'll be transformed into parents when their first child is born. As they age, yet more lifestyle shifts are inevitable. When it comes to the products they buy, their own changing needs are at least as important to them as environmental concerns or other external social trends.

As a packager, you're in a position to profit from these shifts in the delicate balance of shopping habits. Or, you can miss them and wonder what went wrong. When it comes to consumer trends, knowledge is power.

It's with that in mind that PACKAGING conducts its exclusive nationwide consumer survey each year. With the help of a leading consumer-opinion research firm, questionnaires were mailed to a demographically representative sample group. This year, 741 of the 1,000 questionnaires mailed were returned, making the margin of error plus-or-minus 4%.

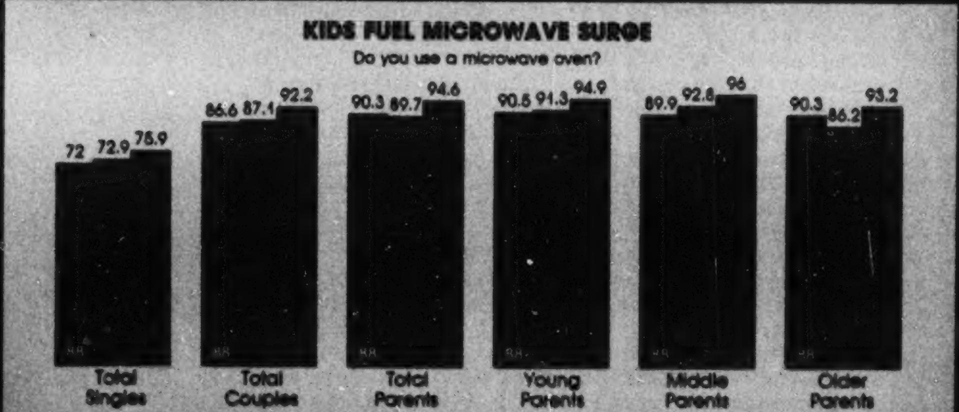
Answers to the 45 questions were tabulated by age group, lifestage (see explanatory box), geographical region, education and income.

The results give a clear picture of consumers' current state of mind and reveal some emerging trends which may influence the packaging decisions you will make in the coming year. We've focused on four in particular.

Zapping kids

Kids are consumers. If you don't believe it, ask their parents. Mom or Dad may do the paying at checkout, but the kids help shop. They voice their preferences, and their

Mini-Cheese Ravioli
Microwavable


KIDS FUEL MICROWAVE SURGE

Do you use a microwave oven?

Microwave usage, which seemed to be leveling off last year, is up again. Biggest gains are among parents, perhaps due to several new zappable kids' meals.

Kids are cooking: microwave usage is up among parents this year

votes count.

More and more, they're voting for microwavable meals. Microwave usage is up this year, and a quick glance at the demographics shows that parents are in large part responsible. Usage has reached 94.9% among young parents, 96% among middle parents and 93.2% among older parents. These high levels represent increases of from 3% to 7% over last year.

In last year's survey, overall microwave usage appeared to have leveled off. To the question, "Do you use a microwave oven?" 84.6% of last year's respondents answered yes, compared with 83% in 1988. That appeared to indicate a plateau, following several years of strong growth.

However, overall microwave usage has reached more than 89% in this year's survey. Although the numbers are up in virtually all lifestage groups, it is among parents that the gains are the strongest.

So the introduction of several new microwavable meals for kids in the past year to 18 months does not appear to be a coincidence.

From the launch of My Own Meals in shelf-stable retort pouches to the recent introduction of Tyson's Looney Tunes frozen entrees, a parade of zappable meals for kids has created a whole new microwave segment.

In fact, it's a segment that some food marketers have estimated at between $250 and $500 million in potential annual sales.

It would be dangerous for a food company to pin its microwave marketing hopes entirely on kids: the boomlet is only a demographic ripple, after which their numbers will decline. It might be smarter to formulate zappable meals for seniors! But there are all sorts of reasons these children's products are working.

First, kids like them. With a less well-developed palate than an adult's, a kid's menu choices tend to be of the simple-and-mushy variety. Many of the objections adults have to the taste and texture of microwaved food simply don't apply.

Second, and more important, parents feel comfortable buying these meals for their children. Marketers have done an excellent job of telling parents that these items are nutritious and a good value.

Populated by the likes of Hormel (Kid's Kitchen) and Con-Agra (Kid's Cuisine), the zappable kids' meal arena may soon have more players. Gerber and J.R. Simplot are among companies rumored to be preparing new introductions.

The question now facing marketers of these items is, What zappable packages do kids like best—shelf-stable containers like cups and pouches, or frozen trays with handles? Safety considerations will undoubtedly enter, since a big part of the appeal of many of these new products is the child's ability to prepare the entree by himself.

Single-serve satisfies

Single-serving packages for such items as yogurt, soup, stews and pudding appear to have caught on among their targeted consumers.

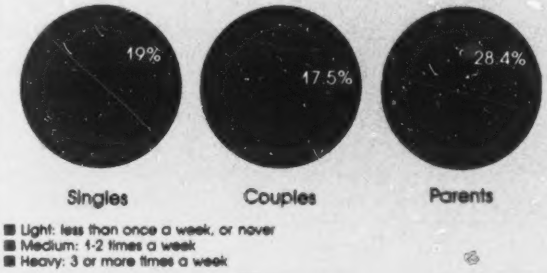
In fact, over 25% of single people we surveyed told us they used single-serve packages three or more times a week. Another 19% ate out of such containers once or twice a week, and slightly over 55% told us they used them less than once a week, or not at all.

Single-serves also proved popular among parents. Nearly 22% used them three or more times per week, and more than 28% relied on them one or two times weekly. Less than 50% answered with less than once per week or not at all.

Quick lunches at one's desk and school lunchbox fillers seem to be the favorite uses for these convenience packages. Also, marketers sus-

HEAVIEST USERS OF SINGLE-SERVE?...SINGLES

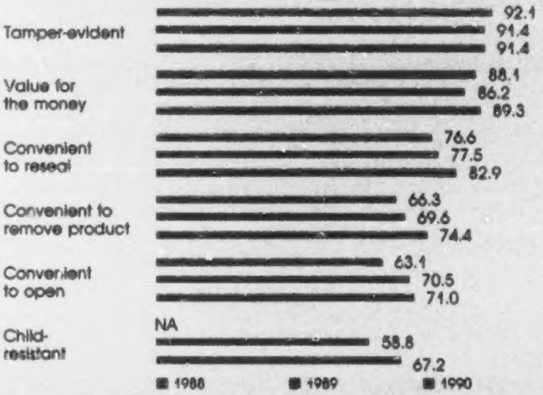
How many times a week do you use single-serve food containers?



Briefcases and lunch boxes—that's where single-serve packages are found. Our survey noted heaviest use by singles and parents—couples without kids avoid them.

PROTECTION AGAINST TAMPERING, POISONING DRIVE OTC SHOPPERS

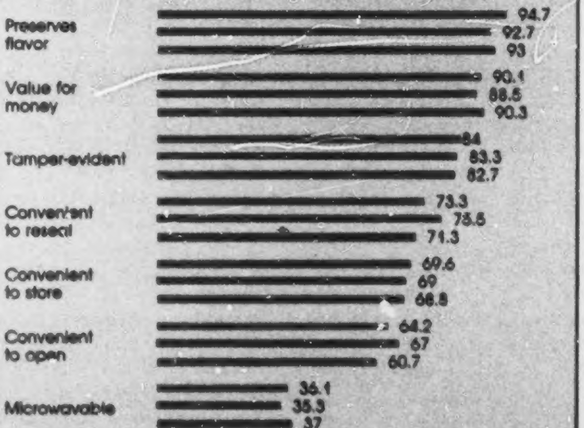
How important are each of the following characteristics when you are considering the purchase of OTC pharmaceuticals and drugs?



Tamper-evidence is still the No. 1 feature of OTC drug packages, our survey finds. Child-resistance seems far more important to shoppers than last year.

FOOD PACKAGES SHOULD FIRST PRESERVE FLAVOR, SAY CONSUMERS

How important are each of the following characteristics when you are considering purchasing food products?



Zappability and storing convenience are nice—but flavor is No. 1, say consumers. A full 93% of those polled rated it "extremely/very important."

Consumers feel ambivalent about the plastic packaging they buy

pect some single-serve packs may be prepared for general at-home grazing by both kids and adults.

However, single-serve packs aren't as popular among couples (two-member households with no children). Over 64% of such consumers told us they used single-serves less than once per week, or not at all.

Frozens stay frisky

In the balance of power among shelf-stable, frozen and refrigerated food products, frozens still retain a commanding lead.

Consumers were asked to name their preferred package, assuming that a particular prepared dinner or entree was available in all three forms. Almost 59% said they would prefer the frozen product. About 22% named shelf-stable as their favorite. The "nonfrozen/refrigerated" responses numbered just over 15%.

Slight shifts in these percentages from last year's survey are not statistically significant. It is clear, at least for now, that Americans have not forsaken their home freezer in favor of gourmet takeout.

Plastics: guilty pleasure?

Much has been reported about efforts made by the plastics industry to deal with the solid-waste issue, as well as ways of dealing with consumer perceptions. Many environmentalists and well-meaning but misinformed journalists have, in their Earth Day 1990 zeal, seized upon plastic packaging as a symbol of the solid-waste problem.

It's not that consumers haven't recognized the problem—our survey shows they have. It's just that the views they hold as voters and citizens have only barely begun to influence their packaging choices.

Plastic packaging is a general favorite, for many reasons. It's a heavy favorite for microwaving. Again this year, almost 43% of our respondents named plastic as their favorite microwave package, vs. the 28% who voted for paperboard, the 25% who voted for glass and the 1% who liked aluminum.

Plastic is still the preferred package for liquid soup, with just over 40% of our respondents naming it, vs. 33% choosing metal cans and 19% choosing glass. And it's still number one among milk drinkers, with over 44% of our respondents preferring it, vs. 34% preferring glass and 20% preferring paper.

So consumers are still buying plastic packaging. But they might not be doing so without hesitation. In spite of expensive public-relations campaigns by plastics suppliers, consumer perception of plastic's recyclability has not improved.

When asked, "In your opinion, how easy is it to recycle plastic?" almost 57% of those surveyed answered "difficult/very difficult." That's a gain of about 2% over last year.

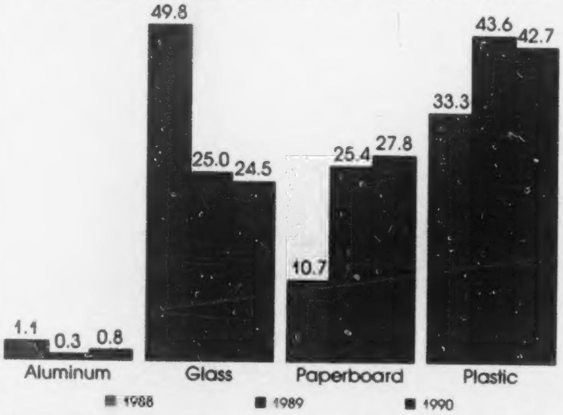
But plastic is not the only packaging material with an apparent perception problem among our respondents.

When asked, "How easy is it to recycle steel?" over 52% of those surveyed answered "difficult/very difficult." That's also up 2% from last year—despite the fact that consumers name metal cans as their favorite package for beef stew, ground coffee and vegetables.

When questioned about aluminum, however, less than 10% of our respondents said they thought the material was difficult or very difficult to recycle. Over 88% said they felt aluminum was "easy/very easy" to recycle.

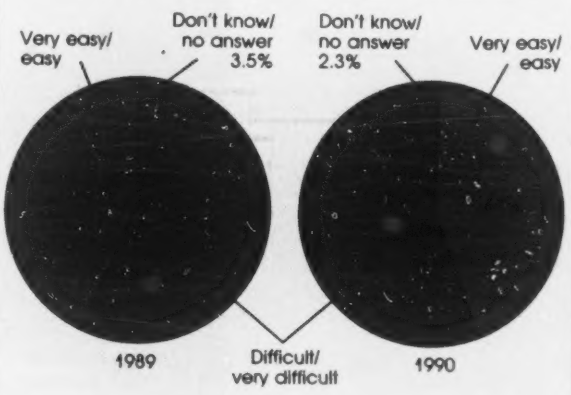
Consumers seem to be telling us that, although they are increasingly aware of the environmental consequences of the products they purchase, they have certain favorite products and packages. These favorites fulfill their needs in one way or another. When a conflict arises, they vote with their dollars. ■

GUILTY PLEASURE: PLASTIC IS CONSUMERS' FAVORITE PACKAGE FOR THE MICROWAVE...



Despite a slight decline over last year, plastic is still shoppers' favorite microwavable package. Paperboard is up slightly, while glass is down.

...BUT RECYCLABILITY REMAINS A CONCERN



Difficulty in recycling plastic is still a concern among our survey respondents. In fact, the perception of pastics' recyclability has declined.

(Editor's note: Our 1990 survey generated a lot of data—more than we could ever present in one feature article. We asked some new questions about the environment and will be reporting consumers' responses in a special news feature in our July issue. Other data will be published as they become relevant.

If you can't wait, or need more detailed information for your own purposes, note that the entire study, consisting of over 225 pages, is available for $500. For more information, contact Consumer Survey Editor, PACKAGING magazine, Cahners Publishing Co., 1350 E. Touhy Ave., Des Plaines, IL 60018, or circle No. 444 on the Reader Service Card.)

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MELISSA LARSON
Senior Editor

"There is no shortage of so-called data on consumer opinions out there. The hard part is sorting the reliable information from the anecdotes and hearsay. There's a right way and a wrong way to poll consumers on their actual buying patterns. We've done it the right way, and we hope it helps."

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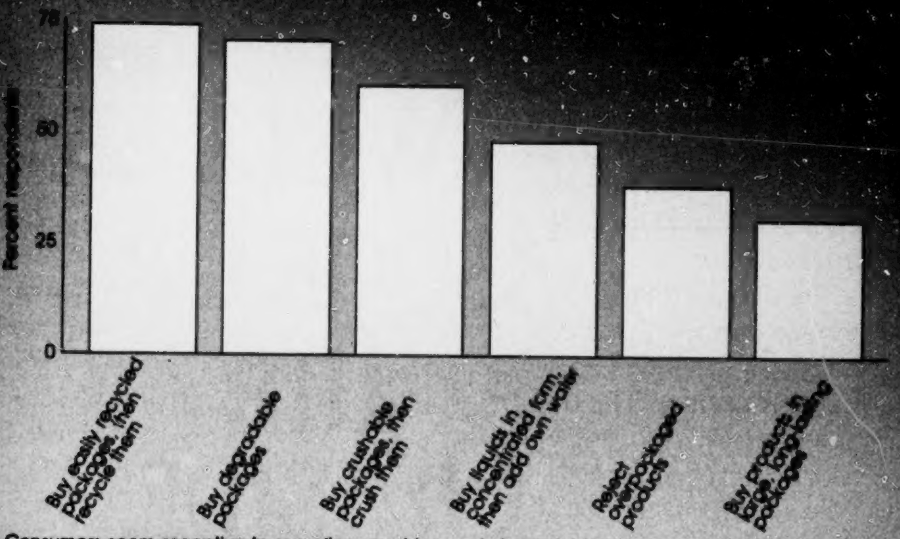

Consumers seem receptive to recycling, crushing and degradables. Less popular are choices which would change their buying habits.

Source: PACKAGING's Consumer Survey

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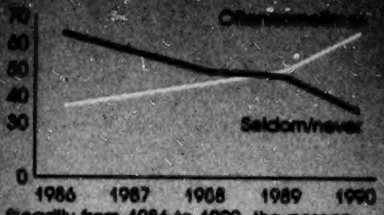
Question: How often does the recyclability of a package affect your purchase decisions?

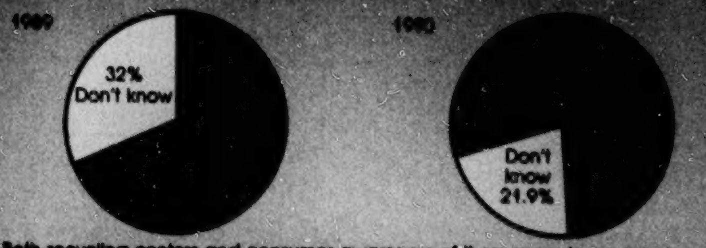


Steadily from 1986 to 1990, the percentage of consumers saying package recyclability "often" or "sometimes" affects their buying decisions has grown. The biggest jump occurred 1989-1990.

Source: PACKAGING's Consumer Survey

ACCESS TO RECYCLING GROWS

Question: Is a recycling center located near your home?



Both recycling centers and consumer awareness of them seem to be growing.

Source: PACKAGING's Consumer Survey

SPECIAL REPORT

Consumers Grapple With 'Green' Packaging

Our survey shows that shoppers, though concerned about trash, want the freedom to buy packages they like

By Melissa Larson Senior Editor

American consumers want to do the right thing for the environment. They realize there's a trash problem. They understand that used packaging becomes trash.

But will they accept restrictions on their choice of packaging? According to PACKAGING's recent nationwide poll of 740 consumers, the answer is no.

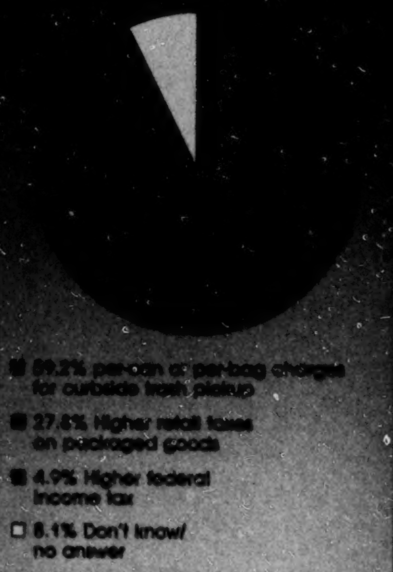
When it comes to choosing from a list of specific actions to help reduce packaging waste, consumers seem receptive to those that call for some post-purchase involvement, including recycling of packages. They're not as enthusiastic about the choices that call for a radical change in their shopping habits, such as being forced to buy only those packages that have been designated "green."

Almost 75% of those polled say they're willing to "buy easily recycled packages, then recycle them," and almost 71% say they're willing to "buy degradable packages." But only 38% say they will "reject overpackaged products" and less than 31% are receptive to buying "products in large, long-lasting packages." The attitude seems to be, "Tell me how to dispose of what I buy, but don't tell me *what* to buy."

Recyclability is an increasingly important package attribute and is affecting purchase decisions, according to our survey. The number of respondents who tell us that package recyclability "often/sometimes" affects their decision to buy a product has climbed steadily to its present figure of 65%, while those who report that it "seldom/never" sways them has dropped just as steadily, to 35% this year.

The most easily recycled packaging material, according to consumers we polled, is aluminum. More than 88% of respondents describe aluminum as "very easy/easy" to recycle—up slightly from 86% in 1989. Ranked next is paper, with 83% of those polled rating it as "very easy/easy."

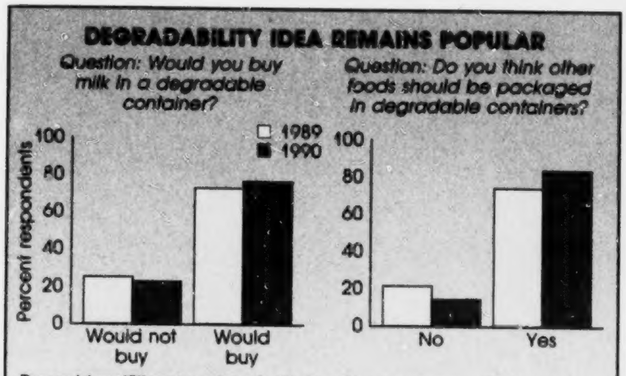
The perception of glass recyclability is up sharply this year. About 70% of the consumers polled this year think glass is easy to recycle, vs. 62% one year ago. Perception of the



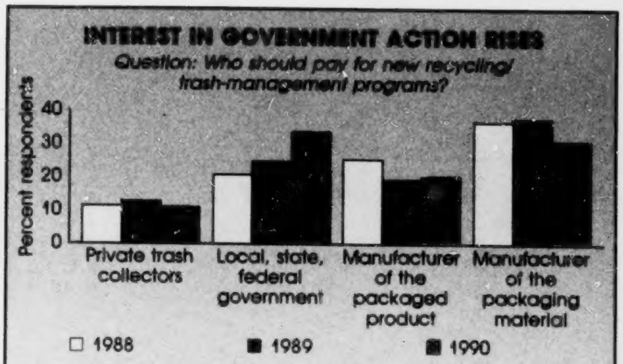
Consumers overwhelmingly favor funding new trash-management programs through curbside charges when they put out the trash, over higher income taxes or retail taxes on what they buy.

Source: PACKAGING's Consumer Survey

Tell us how to dispose of what we buy, say consumers, but don't tell us what to buy



Recent landfill research notwithstanding, consumers remain attached to the notion of degradability as a solid-waste solution and say they would buy degradable packaging.
Source: PACKAGING's Consumer Survey



Each year from 1988, consumer desire for governmental action in solving the solid-waste problem has increased. Packagers are being held less responsible.
Source: PACKAGING's Consumer Survey

recyclability of steel remains flat at slightly under 45%.

Perception of plastics recyclability is also relatively unchanged in the consumer's mind. About 41% rate plastic "very easy/easy" to recycle. That is actually down, although by less than one percentage point, from last year.

Consumers indicate they have plenty of reason to worry about the recyclability of the packaging they use. Roughly 13% of those we polled say they feel that more than three-quarters of the trash they discard is made up of packaging. Another 24% estimate that one-half to three-quarters of their trash is packaging. Approximately 26% put the packaging figure at one-quarter to one-half of their trash total—and, according to most widely accepted estimates, this is closest to the mark. The remaining 20% say used packaging makes up one-tenth to one-quarter of their trash.

Consumers still favor the notion of degradable packaging as a solid-waste solution, despite continuing research showing that significant degradation does not and should not occur in landfills. Their attitude may continue to be influenced by claims of degradability seen on packages of such products as plastic trash bags—claims that have come under fire from government and consumer-advocate groups as misleading.

More than 75% of our survey respondents say they would buy milk in degradable containers if they could. Also, 83% tell us they think other foods should be packaged in degradable containers—up sharply from about 74% last year.

Uncle Sam, we need you

As consumers learn more about the solid-waste issue, their attitudes about how to solve the problem shift. When asked "Who should pay for new recycling programs?" more of our respondents this year than last cite "local, state and federal government." Fully 33% want help from government—up from 25% in 1989 and about 20% in 1988. Conversely, the percentage of those who think the "manufacturer of the packaging material" should shoulder these solid-waste expenses has dropped from about 37% in both 1988 and 1989 to less than 31% in 1990.

Taxes, however, are not popular. When asked "How should new trash-management programs be paid for?" more than 59% of the consumers choose "per-can or per-bag charges for curbside trash pickup" vs. about 28% who favor "high retail taxes on packaged goods." Again, this seems to indicate a willingness to participate in disposal of packaging after-the-fact rather than paying more up front for the goods themselves, and thus perhaps experiencing a restriction in choices.

However, many consumers say they would be willing to pay up to ten cents more for a product in an "easy-to-recycle" package vs. the same product in one that is "difficult to recycle." The percentage of respondents who said they were willing to pay from one to five cents more increased from about 38% last year to about 43% this year. Those who would pay six to 10 cents more increased from 11% to 20%.

Consumers drew the line at paying 11 to 15 cents more per package, however. That percentage dropped from about 8% to 6%. The percentage of respondents who said they were unwilling to pay anything more for an easy-to-recycle package decreased from about 41% to less than 30%.

Of course, what consumers say they are willing to pay to help solve a problem, and what they actually do, sometimes differ.

Recycling centers, incinerators, landfills

About 49% of our respondents this year tell us there's a recycling center located near them, vs. 39% in 1989.

What about the other two methods of handling trash? Consumers favor incinerators over landfills, according to our survey. When asked to choose between those two methods of disposing of used packaging materials, 68% choose incineration, vs. about 28% who opt for landfilling. These proportions have remained fairly constant since last year, when 65% chose burning and 30% chose the dump.

Support for new municipal trash incinerators and landfills is also steady. Slightly less than 65% of consumers tell us they would favor a new incinerator in their community, vs. about 66% last year. Roughly 39% say they would support a new landfill in their community this year, vs. 35% in 1989.

What consumers seem to be telling us is that they're willing to save used packaging, sort it and even crush it if that will help. They want environmentally friendly packaging . . . so long as that doesn't restrict their options at the checkout counter. Rather than less, they want more—more accurate information and more viable choices. ■

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Outstanding	431
Above Average	432
Average	433
Below Average	434

MELISSA LARSON
Senior Editor

"Our research shows that future success will continue to belong to those marketers who can deliver a product/package combination the consumer wants. Incorporating sound environmental design just adds an additional consumer benefit."

PACKAGING NEWS

Do Packages Tell The Truth?

Professors study ethics of labeling; our survey reveals consumer concerns

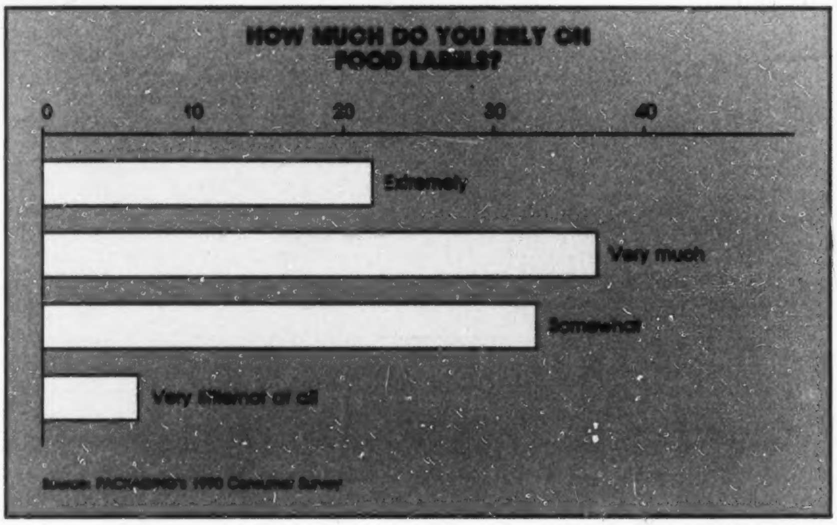
Do food processors purposefully confuse consumers with product claims on their packages?

Are some packagers intentionally misleading shoppers by getting too creative with product labels?

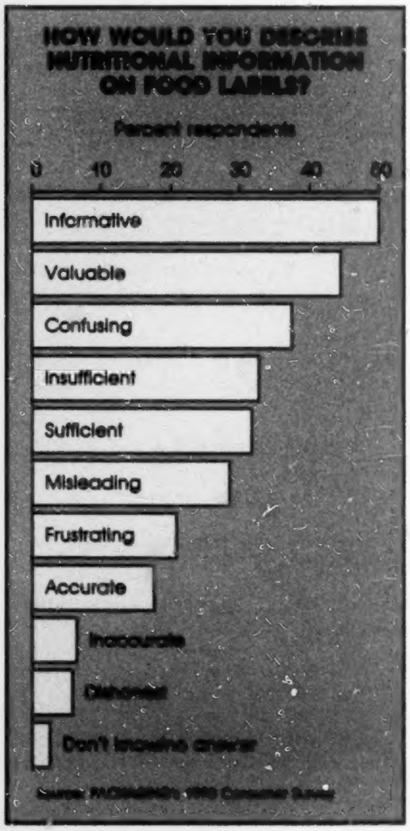
In other words, is heated competition for the consumer's dollar forcing users of packaging to bend the rules of business ethics?

Those and other questions relating to the packaging field—product labeling in particular—are addressed in a new report by Robert J. Corey and Paula Fitzgerald Bone, assistant professors of marketing at West Virginia University. A grant from the Packaging Education Foundation helped fund the professors' work.

More than a few of the concerns raised by the professors in their paper *Ethical Packaging As an Expression of Corporate Values* are reflected in responses to PACKAGING's 1990 Consumer Survey. (For a complete report on the findings, see our June issue. Also see a related story this issue.)



Source: PACKAGING's 1990 Consumer Survey



Source: PACKAGING's 1990 Consumer Survey

Trusted but not always loved

Nearly two-thirds of the 700-plus consumers responding to our survey this year say they rely on food labels "extremely/very much." And consumers tend to think of labels as truthful: Corey and Bone cite a 1980 FDA survey in which only 1% of respondents said they had ever purchased a food product that was falsely labeled.

Products may not be being labeled "falsely," but that does not necessarily mean they are being labeled adequately. Consumers responding to PACKAGING's survey are not overwhelmingly laudatory when the subject is product labeling.

Using a list of adjectives from our survey, 50% of the respondents call food labels "informative" and 45% call them "valuable." That's the good news. The bad news is that 38% of our respondents call food labels "confusing," 33% call them "insufficient" and 29% call them "misleading." A small but significant 6% go so far as to use the word "dishonest."

The consumer's level of education seems to be a factor. In our survey, the percentage of respondents calling food labels "insufficient" and "misleading" goes up along with education.

What's 'low'? What's 'light'?

The FDA has been struggling for years to define what "low cholesterol" really is. "No cholesterol" has been used in advertising foods that could not possibly have ever contained cholesterol. And the seemingly straightforward term "light" has been made confusing by its use to describe everything from a product's fat content to its color.

Corey and Bone note in addition that "manufacturers can manipulate the serving size of a particular item, thereby influencing the nutritional information provided." And, they say, "separate listings of various types of sugars are sometimes used to disguise the fact that sweeteners are a primary product ingredient."

Under current law, nutritional labeling is required only when a nutritional claim is made about a product. Corey and Bone state that roughly 55% of food products now carry such labeling. But then they ask, "What about the other 45%? Does the consumer's right to information make the practice of not providing informative labeling unethical?"

The FDA is currently considering the pros and cons of requiring nutritional labeling on all food products. The agency is also studying other means of updating package label requirements. Congressional legislation too is being explored.

Another ethics issue pointed up by the two professors involves label legibility. Use of printing that is too small to be read easily may be increasingly criticized as the U.S. population grows older, they say. That could well prove true. However, PACKAGING's 1990 Consumer Survey reveals no correlation between the age of the consumer and his or her use of terms like "confusing" or "frustrating" to describe labels.

Already highly regulated

Corey and Bone say that "Package labeling is perhaps the most regulated . . . area of packaging." Much of that regulation is imposed by government. Increased self-regulation by food packagers may prove difficult, say the professors.

"Even if business people could agree on principles of moral philosophy, it would be difficult to develop a system to equitably establish accountability for the morality of packaging decisions," say the professors. The reason: Many people are involved in the packaging process and the work of each individual is often restricted to just one or two of the numerous tasks.

Nevertheless, say the professors, "There is little doubt that packaging issues have reached a level of public concern what will demand attention and challenge business as we enter the decade of the 1990s."

—*Greg Erickson*

PACKAGING's 100 GIANTS

Mergers, acquisitions among key food, beverage packagers concentrate materials purchasing power at the top

By Mark Spaulding
Senior Editor

A review of this year's PACKAGING 100 makes one thing clear: The big spenders have grown bigger and are spending more than ever. Their increased clout has changed rankings throughout the list and pushed 16 of last year's giants out of the picture.

These 100 largest consumers of packaging materials and containers collectively spent $3.1 billion more to package their products for the marketplace in 1989 than in 1988. This increased cost goes beyond simple volume growth and a general expansion of the domestic economy. It is a direct reflection of the mergers among key food and beverage packagers, concentrating materials purchasing power into fewer, larger companies.

Six of the packagers no longer listed were on the buyout side of major corporate mergers during 1989. Most notably, these included Kraft's acquisition by Philip Morris, General Cinema's sale of its bottling operations to PepsiCo, Holly Farms' purchase by Tyson Foods and Squibb's friendly merger with Bristol-Myers.

The other missing packagers fell from the ranks because of declining sales and resulting drops in packaging expenditures. Acquisitions by companies low on last year's list continue to increase the drop-off figure for the PACKAGING 100. The 100th-ranked packager's purchases this year grew by $8.5 million.

Our exclusive PACKAGING 100 provides a remarkable picture of the size and scope of the packaged-goods industry. Check these statistics:

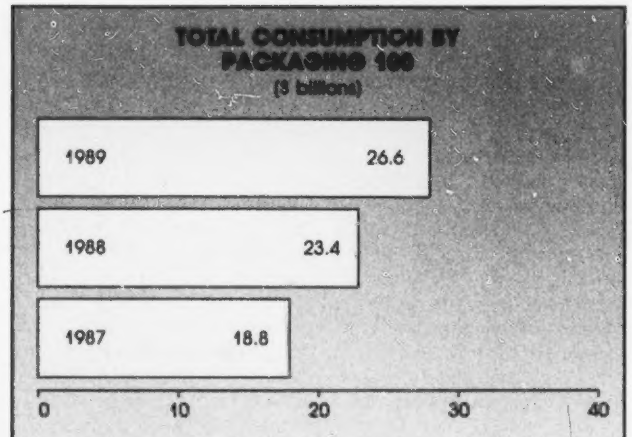
The top 100 companies consumed more than $26.56 billion worth of packaging materials and finished containers during 1989. This represents a 13.5% increase in expenditures over last year's sum. The PACKAGING 100 now purchase roughly 37.5% of the total U.S. packaging industry's consumption, compared with 35.8% of the packaging products sold in the U.S. in 1988.

250 companies surveyed

We surveyed 250 companies to determine the amount spent on packaging materials and containers used to package any and all products sold in the U.S., including the value of self-manufactured containers. All types of packaging were considered: primary containers, labels, closures, shipping cases, pallets and stretch film.

Supplemental sources such as U.S. Dept. of Commerce statistics, corporate annual reports and Cahners Economics rounded out our spreadsheet. Where necessary, we made estimates using ratios of packaging costs

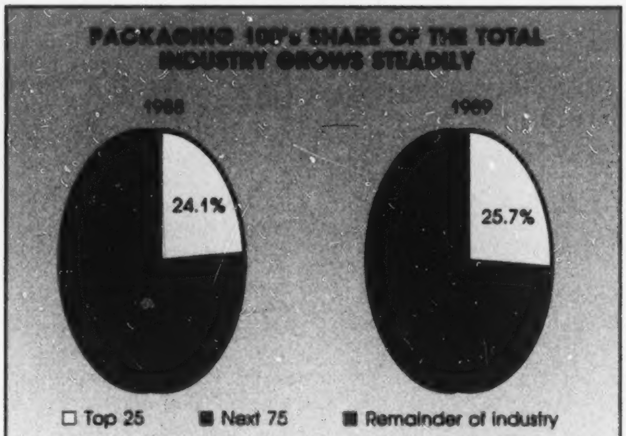
General Mills
WHOLE
WHI
Raid
st of Champions
IES
ScotTowels
DISPOSABLE HAND TOWELS



TOTAL CONSUMPTION BY PACKAGING 100

($ billions)

Top 100 consumers of packaging materials and containers show annual increases of $4 billion over past three years.



PACKAGING 100's SHARE OF THE TOTAL INDUSTRY GROWS STEADILY

Heavy merger activity in key food and beverage categories concentrates more purchasing power into fewer packagers.

Lipton
Pasta & Sauce
Aluminum
Wood,
Plastic
Assorted
Snack Pack
Vanilla Pudding
PERFECT TO PACK IN LUNCHES!
3M
Surfaces
Softsoap
AntiBacterial
OPTION
Duncan Hines
Tiara Desserts
Crystal Clear 100
Johnson
WAXED
MICHELOB
DRY

Top 100 purchase 37.5% of the total packaging industry's 1989 consumption

relative to the value of product shipments. Changes in the cost of primary materials and other variables were factored in.

The huge purchasing power of the top 10 shows how food and beverage packagers dominate overall spending. More than $12.68 billion, or 47.7% of the PACKAGING 100's total, was purchased by these 10 companies alone. The top 25 packagers bought $18.22 billion, or 68.6% of the total; the top 50 companies purchased $23 billion worth of materials, 86.6% of the total. Clearly, the figures show how mergers are creating fewer, bigger players with more purchasing clout.

Energy from food, drink

The packaging-intensive prepared-foods industry continues to leave indelible marks on the PACKAGING 100. The top five food packagers alone purchased roughly $4.08 billion worth of materials and containers in 1989, or about 17% of the total food industry's consumption of packaging products.

The U.S. beverage industry has an even greater impact on the consumption of packaging. The top five beverage makers bought about $6.1 billion of bottles, cans, multipacks and shippers last year—fully 45% of the overall beverage industry's packaging purchases in 1989.

Ethical and OTC pharmaceutical packagers also account for a substantial portion of packaging consumption nationwide. The five largest drug makers purchased nearly $925 million of packaging products, about 14% of last year's total pharmaceutical, soap and toiletry consumption.

Gains and losses

The rise and fall in expenditure levels of many companies in the PACKAGING 100 tell an interesting story about the impact of mergers, divestitures and the general ups and downs in business for leading packagers.

Far and away the biggest decline in packaging expenditures was recorded by Beatrice Foods, with a drop of more than 40%. The company fell 23 places in the PACKAGING 100 rankings after its divestiture of the Fischer Nut Co. to Procter & Gamble and a persistent, sharp decline in overall sales.

Stroh Brewing Co. saw its packaging consumption fall slightly less than 10% last year on continued market-share loss for its flagship brands. RJR Nabisco spent about 18% less on packaging as its operations were tightened after the sale of Del Monte Foods, Del Monte's Tropical Fruit Div. and Butterfinger-Baby Ruth candy businesses.

On the rising side of packaging expenditures were companies whose rapid growth can be attributed to either strategic acquisitions, good business, or both. Foremost among these even-bigger packaging consumers is Unilever US, the new owner of Faberge cosmetics and personal-care products. Our calculation of its consumption rose 60.3% after we factored in this acquisition and accounted for good growth of its Lever Bros. household products and Thomas J. Lipton food products.

Tyson Foods' buyout of Holly Farms pushed consumption up a whopping 48.4% in 1989. Two other major leaps in packaging purchasing—Procter & Gamble at 41.7% and Phillip Morris at 29.6%—were also the result of substantial acquisitions. P&G took over the cosmetics packaging of Noxell Corp. and the bottling operations of Sundor Group. PM, of course, acquired Kraft, Inc., folding Kraft's and General Foods' packaging requirements together.-

Just good business also had

WHOLE GRA
WHEA
ScotTowels
Lipton
Pasta & Sauce
HOME COOKIN
Lysol
bathroom
Touch-U
Snack pack
Vanilla Pudding
Aluminum Oxid
Wood, Met
Plastic & P
SUPERFLO
3M
d Surfaces
Softsoap
OPTION
Duncan Hines
Crystal
Clear
100
MICHELOB
DRY

an effect on higher packaging consumption by several of the top 100. PepsiCo's expenditures grew by 38.5% on very strong sales of its soft drinks and Frito-Lay snack foods. Packaging growth from new lines of potato-based snacks and cookie varieties made Keebler's purchases jump 26.7%.

Revving up the machines

Twelve companies reported a total of more than $209 million in capital expenditures for packaging machinery and equipment for this year's PACKAGING 100. While not a dramatically high figure overall, the total does contain significant amounts from individual packagers: $72 million spent by Sara Lee Corp., $46.2 million purchased by International Multifoods and $45 million bought by Mobil Oil.

An across-the-board estimate of packaging capital expenditures shows the Top 100 purchased roughly $1.3 billion worth of equipment last year for packaging lines nationwide. This is about 45% of all packaging machinery bought during 1989.

Many packagers implemented major line expansions in 1989 or are planning them for the coming year. For example, among the top 10 companies, Philip Morris' Miller Brewing unit will install larger draft-beer packaging facilities in California and New York, Anheuser-Busch broke ground for its 13th brewery in Cartersville, Ga., and Seagram USA will open a packaging line for Tropicana in New Jersey.

Other packaging-line expansions and improvements: Adolph Coors' $27 million expenditure to handle wider distribution of its Party Ball package and new Keystone beers; American Home Products' national introduction of Chef Boyardee Microwave Meals; DuPont's $2.5 million outlay to accommodate growth for its industrial chemicals; movement of a Schering-Plough filling line to Puerto Rico; and $1 million to handle Land O'Lakes' growing packaged-cheese business.

The impact of the PACKAGING 100 on the overall packaged-goods industry may grow even stronger in the coming years. If corporate mergers continue to build larger, single buyers of packaging materials and containers, the expenditures of these top 100 companies will likely hit 50% of all U.S. packaging consumption by 1998. ■

MAJOR 1989 PACKAGER MERGERS/SALES

ACQUISITIONS

Principal Company	Acquired Packager
Amer. Home Products	A.H. Robins
Black & Decker	Emhart
Bristol-Myers	Squibb
Cadburry-Schweppes	Orange Crush, Hires
Grand Metropolitan	Pillsbury
PepsiCo	General Cinema Bottling
Philip Morris	Kraft, Inc.
Procter & Gamble	Noxell, Sundor Group
SmithKline Beckman	Beecham Group
Tyson Foods	Holly Farms
Unilever US	Faberge, Calvin Klein

DIVESTITURES

Principal Company	Divested Packager
Avon Products	Parfums-Stern, Perry Ellis
Brown-Forman	California Cooler, Martell
RJR Nabisco	Del Monte Foods USA
	Butterfinger-Baby Ruth

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Outstanding	447
Above Average	448
Average	449
Below Average	450

General Mills
WHOLE GRA
WHEA
ScotTowels
Lipton
Pasta & Sauce
HOME COOKIN
Lysol
bathroom Touch-U
Aluminum Oxide
Wood, Meta
Plastic & P
SUPERFLO
kpack
Vanilla Pudding
3M
d Surfaces
Softsoap
OPTION
Duncan Hines
Crystal Clear 100
MICHELOB
DRY

100

1

Philip Morris $2,568,450,000*
New York, N.Y.

Consolidation of Kraft bumps PM into the No. 1 slot. Share of U.S. cigarette market hits 42%. Kraft General Foods introduces over 100 new products. Maxwell House share hits 34%. Jell-O desserts volume grows 3%. New Kraft sidedish and dinner lines prove successful. Total Oscar Mayer volume rises 6%. Miller Brewing launches Lowenbrau Light and non-alcohol Sharp's nationally. Expands packaged-draft facilities in Calif. and N.Y.

2

Anheuser-Busch $2,300,000,000
St. Louis, Mo.

A-B modernizes St. Louis packaging plant, breaks ground for 13th brewery in Ga. Bud Light records double-digit growth. Non-alcohol O'Doul's, premium Anheuser Marzer, and Bud Dry enter test markets. Metal Container Corp. supplies upwards of 4 billion aluminum cans to breweries. Campbell Taggart introduces series of oat-based products under its primary labels. Eagle Snacks opens new Calif. plant, launches Ranch, Nacho flavor tortilla chips.

3

PepsiCo $1,460,880,000*
Purchase, N.Y.

Acquires 29 bottling franchises including $1.8 billion purchase from General Cinema. Half of all Pepsi-Cola domestic volume comes from company-owned bottlers. Introduces Diet Mountain Dew nationally. Begins testing H2Oh!, Pepsi A.M. and Mountain Dew Sport. Frito-Lay pound volume rises 7%, commands 13% of the U.S. snack-food market. Strong performers are Fritos, Ruffles and Doritos. Snack chips in canisters enter test markets.

4

Procter & Gamble $1,385,500,000*
Cincinnati, Ohio

Laundry/cleaning product volumes achieve new highs led by national expansion of Tide with Bleach, StainGard Bounce and Spic and Span liquid. Major acquisitions include Fisher Nut business, Sundor Group fruit drinks and Noxell cosmetics. Record unit volumes in hair-care from Pert Plus and Pantene shampoos. Market-share increases for Jif peanut butter and Pringles salted snacks. Overall paper-products business improves on strength from Pamper, Puffs and Always.

5

Coca-Cola $1,161,720,000*
Atlanta, Ga.

Gallon sales grew only 2.5% but domestic share hits 40%. Sugared Coke Classic volume grows 2%, but diet Coke continues double-digit share growth for one-calorie segment. Coke Foods sells coffee and bottled-water operations, begins national distribution of chilled Minute Maid in 96-ounce plastic bottles. Other significant product introductions include MM Premium Choice and aseptic Hi-C Ecto Cooler.

6

Coca-Cola Enterprises $1,086,932,000*
Atlanta, Ga.

Exclusively a soft-drink bottler, buys more than 10 billion metal cans a year for Coke, Diet Coke, Sprite and resurrected Fresca brands. This is over one-fifth of all cans used in the soft-drink industry. Nearly 40 plants package 550 million cases annually. Installs 165-valve can filler in Atlanta plant. Its L.A. facility runs multiple lines at 6,000 cans per minute. Purchases four smaller regional bottlers in Alabama, Georgia and Texas. Buys corrugated on region basis.

7

RJR Nabisco $908,800,000*
New York, N.Y.

Drops four slots after divestiture of Del Monte Foods canned goods, Tropical Fruit Div., Butterfinger-Baby Ruth and Pearson. Nabisco's eight core brands—including Chips Ahoy!, Ritz, Premium and Oreo—account for 75% of cookie/cracker volume. Success of Teddy Grahams pushes brand to No. 3. More single-serve cookie snack packaging planned for 1990. Plant expansions and modernizations include $55 million for Nabisco operations, $5.75 million for Planters LifeSavers.

8

Seagram USA $712,920,000*
New York, N.Y.

Consolidates U.S. beverage operations into single unit. Juice and soft-drink sales leap 36% while sales of spirits and wine rise almost 6%. House of Seagram brands register gains against general decline in distilled spirits. Wine cooler sales continue to decline. Tropicana covers 23% of U.S. OJ market with 33% share of ready-to-serve category. New packaging facilities for Tropicana to open in N.J. and Calif.

9

Sara Lee $575,000,000
Chicago, Ill.

Queen of frozen baked goods also markets wide range of meat products under Jimmy Dean, Mr. Turkey and Hillshire Farm labels. One-third of business concentrated in hosiery, knitwear, household and personal-care goods from Hanes, L'Eggs, Bali, Isotoner and Kiwi. Packaging expenditures show 65% for paperboard, 25% for plastic and 5% each for metal and glass. Capital expenditures for packaging machinery and equipment: $72 million.

10

Unilever US $519,820,000*
Greenwich, Conn.

Reorganizes edible-fats business under Van den Bergh label. Launches Country Crock cheese in tubs. Acquires Gold Bond Ice Cream. Little growth in traditional markets for Lipton tea and soup. Ragu maintains lead among competitive pasta sauces. Successful relaunch of Wisk liquid in new bottle design. Acquires Faberge cosmetics. Consolidates all personal-care products under new Chesebrough-Pond's USA. Volume growth for Vaseline.

* Estimate

11 Adolph Coors

Golden, Colo. $489,675,000

National distribution of all Coors beers (except Ind.) continues. Coors Light ranks No. 4 nationally. Expands marketing of Party Ball. Introduces Keystone and Keystone Light beers. Packaging expenditures reported as 60% for metal cans and kegs, 22% for glass bottles, 15% for paperboard and 3% for plastic materials. Packaging-equipment capital expenditures at $27,045,000. Plans 6% increase in beer-packaging capacity for 1990.

12 Whitman

Chicago, Ill. $428,612,000*

Pet Inc. major brands—Old El Paso, Progresso, Orval Kent, Van de Kamp's and Whitman's Chocolates—show 24% increase. Markets No. 1 products in eight food categories. Pepsi-Cola General increases sales by nearly 7% in 12 Midwest, Southeast states. Serves market of 25 million people and ships 132 million cases per year. Acquires Pepsi franchises in Wis., Mich.; Dr. Pepper franchises in Ky., W.V. and Va.

13 Brown-Forman

Louisville, Ky. $415,500,000*

B-F drops slightly in ranking after divesting Martell to Seagram USA and California Cooler to Stroh Brewing. Wine and spirits sales climb a modest 2% with Jack Daniel's, Southern Comfort and other hard-liquour products showing growth. Domestic sales of California Cooler plunge 49% in FY89 along with 9% decline for Bolla wines. Icy Vodka begins national distribution. Premium-brand Hartmann luggage reports stable sales.

14 Kimberly-Clark

Dallas, Texas $413,896,000*

Major volume growth for infant-care, feminine-care and household-tissue products. Introduces Huggies Pull-Ups training pants, more absorbent Depend briefs and softer, stronger Kleenex tissues. Reports 5% sales decline for newsprint and groundwood printing papers, but sales rise for premimum correspondence paper. Expansions at Neenah Paper facilities continue. Major capital expenditures for consumer-tissue operations.

15 Borden

New York, N.Y. $400,000,000

Consolidates production/packaging into larger, more modern facilities while it closes smaller, older plants. Exits fluid-milk and cultured-products markets in Midwest, Southeast. Largest domestic pasta maker produces more than 1 billion lbs. per year. Introduces Creamette Microwave Elbows nationally; three more shapes to enter market this year. Sales of Krunchers! potato chips rocket 50%. Also markets 40 niche grocery brands.

16 Campbell Soup

Camden, N.J. $381,000,000*

Unit volume for Campbell USA rises 6%. Ready-to-serve and dry soups show market-share gains; condensed-soup sales decline. V8 benefits from new packaging forms. Plans national distribution for microwave Souper Combos line. Acquires Marie's salad dressings, Durkee olives, Open Pit BBQ sauce. Pepperidge Farm sees high volume growth for American Collection cookies and 20-ounce gable-top carton for Goldfish crackers.

17 Eastman Kodak

Rochester, N.Y. $380,000,000*

America's Storyteller consolidates film, photofinishing and batteries into Consumer Imaging Div. Eastman Chemical posts 13% sales gain on plastics, fibers. Sterling Drug divests non-core products. Solid sales increases for Carpuject pre-filled syringes. Introduces Therapy Bayer coated aspirin. Lehn & Fink debuts Glass Mates wipes, Lysol Bathroom Touch-Ups, Cling toilet-bowl cleaner in angle-necked bottles.

18 Stroh Brewing

Detroit, Mich. $364,000,000*

On-again/off-again buyout of Stroh by Adolph Coors may be on-again. Continued market-share loss for nation's No. 3 brewer. Acquires California Cooler from Brown-Forman; consolidates brand into new unit with current White Mountain beer-cooler business. Begins packaging California Cooler at several plants in March. New packaging graphics/ad campaigns fail to stem market-share loss for flagship brands.

19 ConAgra

Omaha, Neb. $350,000,000

Consumer frozen foods show healthy gains led by Banquet products. Principal brands—Armour Classics, Morton, Patio, Chun King, Healthy Choice—market more than 300 different packaged items. Armour Meats up substantially. Consolidates foodservice businesses. O'Donnell-Usen packages over 100 frozen seafood products. Reports expenditure breakdown as 70% for paperboard, 25% for plastic, 3% for metal and 2% for glass.

20 Avon Products

New York, N.Y. $338,150,000

Divests Parfums-Sterns and Oscar de la Renta, Perry Ellis cosmetics and fragrances. Reports general upgrades to wide range of packaging lines. Expenditure breakdown shows 25% in glass containers, 20% in plastic tubes and bottles, 20% in injection-molded products such as closures and 15% in paperboard packaging. Strong performers include Avon Color cosmetics and nail-care, BioAdvance, Moisture Therapy and Giorgio's Red perfume.

* Estimate

100

Rank ('89)	Company Profile	Packaging Expenditures
21 (21)	**Scott Paper** Philadelphia, Pa. New personal-care, environmental-cleaning and health-care products require greater packaging expenditures. Strong performance from Baby Fresh wipes, Cottonelle, Scotties, ScotTowels, Viva and ProCare soap-dispensing systems. Overall U.S. sales volume up 4%.	$325,745,000*
22 (22)	**G. Heileman Brewing** LaCrosse, Wis. Maintains rank in Top 100 despite declining market share among top brewers. "God's Country" brewer packages Old Style and several smaller brands about equally in metal cans and glass bottles. Expenditures average $100 million for those materials, about $60 million for paperboard.	$325,000,000
23 (27)	**American Home Products** New York, N.Y. Acquires A.H. Robins. Launches Chef Boyardee Microwave Meals nationally. Dramatic sales increase for Olive Oil Pam. Packaging expenditures: 50% for metal containers, 21% each for paperboard and plastic, 4% for glass. Packaging capital expenditures: $5 million.	$319,000,000
24 (25)	**General Mills** Minneapolis, Minn. Growth in existing businesses account for majority of increase. Paperboard makes up bulk of purchases at 75%; plastic at 25%. Pop Secret an especially strong performer. New products less than 5 years old make up 29% of consumer-foods volume growth.	$315,000,000
25 (23)	**Nestle Foods** Purchase, N.Y. Buys Butterfinger-Baby Ruth, Pearson candies from RJR. Also acquires Culinary Brands, maker of sous vide prepared meals. Introduces new Right Course low-fat, low-salt, low-cholesterol entrees under Stouffer's label. Share of U.S. confectionery market grows to about 12%.	$295,626,000*
26 (24)	**Grand Metropolitan** Minneapolis, Minn. Pillsbury's merger into Grand Met only strengthens brands. Markets No. 1 products in several categories: refrigerated dough, canned/frozen vegetables and frozen pizza. Launches largest pet-food introduction with canned/dry Alpo cat food endorsed by spokescat Garfield.	$295,570,000*
27 (28)	**Clorox** Oakland, Calif. Continues successful launch of companion products: Lemon Fresh Clorox bleach, Hidden Valley Italian Style, Kingsford charcoal lighter. Expands distribution of Clorox detergent to 45% of U.S. Completes national distribution of Soft Scrub With Bleach cleanser and BBQ Bag briquets.	$295,000,000*
28 (—)	**Cadburry-Schweppes** Stamford, Conn. Acquires Orange Crush, Hires Root Beer and Sun-drop Citrus sodas from P&G. Market coverage for these new brands hits only 30% of U.S. population. Crush volume down to 17 million cases. Continuing strong performance from flagship Canada Dry products.	$280,000,000*
29 (30)	**Revlon Group** New York, N.Y. Restages entire line of Flex shampoos and conditioners. Introduces Fortifyl Complex hair-care fluids in complex, ampule-like vials. Expands distribution of Tandem Pak bottles for Flex and Jean Nate products. Expenditures grow in line with overall sales and volume increases.	$266,434,000*
30 (26)	**H.J. Heinz** Pittsburgh, Pa. Adding a handle to 64-ounce plastic ketchup bottle boosts sales for the package 47%. Weight Watchers frozen desserts now command 19% market share. Acquires Portion Pac, maker of single-serve condiments. Ore-Ida makes improvements to packaging operations in Ore., Idaho and Wis.	$240,000,000

Rank ('89)	Company Profile	Packaging Expenditures
31 (32)	**Quaker Oats** Chicago, Ill. Market leaders—Quaker Oatmeal, Gatorade, Aunt Jemima, Celeste pizza, Rice-A-Roni and Gravy Train—drive up grocery-product sales 9%. Strong growth for juvenile products pushes Fisher-Price sales up 3%. Acquires Pritikin dietetic-food brand. Sells Ghirardelli chocolate.	$238,710,000*
32 (33)	**Ocean Spray Cranberries** Lakeville/Middleboro, Mass. Sales and volume skyrocket nearly $100 million on popularity of Mauna Lai guava drink, cranberry juices, shelf-stable concentrates in aseptic containers and Cran-Fruit plastic-packed sauces. Overall capital expenditures: $35 million.	$230,620,000*
33 (—)	**S.C. Johnson & Son** Racine, Wis. Launches Raid Max in high-tech aerosol cans and fumigators. Glade Potpourri Spray in 3 scents is first reformulated Glade product since 1961. Repositions Soft Sense Shave Gel in pastel containers. Institutional cleaners and polishes maintain market share.	$216,000,000*
34 (35)	**Johnson & Johnson** New Brunswick, N.J. Merges Baby Products, Health Care and Dental Care groups into Consumer Products unit. Doubles production capacity for Acuvue disposable contact-lenses. Package redesign helps launch Children's Tylenol Cold tablets. Begins marketing drawstring packaging for StayFree products.	$191,000,000*
35 (37)	**E.I. DuPont de Nemours** Wilmington, Del. Industrial chemicals volume rises 9%. Polymers volume remains unchanged. Packaging expenditures reported as 59% for paperboard and corrugated containers, 31% for metal and 2% for plastic materials. Spent $2.5 million on packaging machinery and equipment.	$185,000,000
36 (36)	**Dean Foods** Franklin Park, Ill. Acquires Mayfield Dairy Farms, Bellingham Frozen Foods. Reports packaging expenditures of $90 million for paperboard, $45 million for plastic, $27 million for metal, $18 million for glass. Introduces new non-fat ice cream, frozen yogurt and light cultured items.	$180,000,000
37 (40)	**Dow Chemical** Midland, Mich. Chemical volumes rise 4%. Merges Home Care, Food Care divs. into Household Products unit. Buys $50.8 million of paperboard, $49.7 million of plastic materials, $32.7 million of metal containers. Remainder of expenditures (about $46 million) for pallets, closures, labels. etc.	$180,000,000
38 (43)	**Geo. A. Hormel & Co.** Austin, Minn. Completes national roll-out of Top Shelf entrees and Micro Cup single-serving meals. New Chicken and Turkey by George refrigerated products expand market coverage. Launches Kid's Kitchen shelf-stable entrees in microwave trays. Foodservice products maintain record volumes.	$166,233,000
39 (—)	**American Cyanamid** Wayne, N.J. Medical Group grows 9% on gains from Rx drugs, medical devices. Shulton Group advances 2%. Introduces water-based Combat insect fogger and Pine-Sol Spruce-Ups cleaning wipes. Disappointing sales for Thrive men's hair-care products. Plans test of TapGuard faucet filters.	$163,100,000*
40 (39)	**CPC International** Englewood Cliffs, N.J. Best Foods volumes show 1% increase. Acquires JJ Flats flatbread business to expand Baking Group. Repositions Knorr desserts with upscale package redesign. Markets new 4-lb. Skippy peanut-butter jar. Volumes for Sahara pita and Arnold light breads rise at double-digit pace.	$163,000,000*

* Estimate

Rank ('89)	Company Profile	Packaging Expenditures
41 (52)	**Bristol-Myers Squibb** New York, N.Y. Merger of 2 packaging giants boosts ranking. Leading marketer of chemotherapy drugs develops innovative, protective packaging. Major consumer brands include Theragran vitamins, Bufferin and Excedrin, Ban, Miss Clairol, Drano, Vanish, Endust, Windex and Renuzit.	$161,720,000*
42 (—)	**Warner-Lambert** Morris Plains, N.J. Parke-Davis Rx drugs business grows 9% on strength of cardiovascular product line. OTC health-care products grow 6%. Sales of Listerine reach $200 million. Major consumer brands include Benylin cough syrup, Lubriderm lotion, Trident, Dentyne and Certs mints.	$161,546,000*
43 (44)	**Hershey Foods** Hershey, Pa. Acquires Ronzoni from Kraft General Foods. Introduces Perfection microwave pasta. Adds major packaging lines in Neb., Calif., Kan. Hershey Chocolate Bar Flavor Puddings launched in East Coast markets. Hershey Chocolate Milk in aseptic packaging goes national this year.	$160,972,000*
44 (41)	**General Motors** Detroit, Mich. Chevrolet's Geo small-car line finds consumer acceptance. Automobile-manufacturing costs and parts sales push spending up 2.5%. Introduces minivans for Chevrolet, Oldsmobile and Pontiac. Most of purchases in paperboard shipping containers and retail cartons: about $120 million.	$160,000,000*
45 (46)	**Ralston-Purina** St. Louis, Mo. Category leader Purina Dog Chow posts large volume increase. Launches Happy Cat cat food in resealable, paper cartons. New 4- and 8-packs of Energizer batteries debut. National distribution begins for Nintendo, Barbie and Batman breakfast cereals targeted at kids.	$154,450,000*
46 (56)	**Colgate-Palmolive** New York, N.Y. Seventh straight year of volume growth, up 4%. Begins marketing kids' decorator toothpaste pumps to kids for Colgate Junior. Acquires Scherer Laboratories' gel products for dentists. Body Care Group introduces 60 new products. Breaks ground for Hills Pet Products facility in Ind.	$146,000,000*
47 (47)	**Castle & Cooke** Los Angeles, Calif. Leading distributor of fresh fruits and vegetables markets expanding line of fruit-based packaged foods, nuts. Upgrades facilities to package Dole sliced vegetables. Launches first non-pineapple-based fruit drink—Pure & Light—nationally. New date plant on-line.	$145,280,000*
48 (45)	**Kellogg** Battle Creek, Mich. Reports drop in U.S. market share for some leading Kellogg cereals. Convenience foods—Eggo waffles, Mrs. Smith's pies—have over 50% market share. Opens automated line in Ill. for frozen soups. Adds production capacity at convenience-foods plants in Tenn. and Pa.	$142,953,000*
49 (48)	**Greyhound Dial** Phoenix, Ariz. Liquid Dial soap dispensers and Lunch Bucket shelf-stable entrees enter national distribution. Introduces Mountain Fresh Dial bar soap and Purex Liquid detergent in new 2-gallon bag-in-box packaging. High-speed fillers added at Memphis plant to handle Liquid Dial demand.	$137,000,000
50 (—)	**Dr Pepper/Seven-Up** Dallas, Texas Uses new package graphics to relaunch reformulated Diet 7UP, Cherry 7UP. State-of-the-art facility in St. Louis packages over 130 soft drink brands. Premier Beverages subsidiary markets Welch's Grape Soda. Buys IBC Root Beer sold in classic brown bottles.	$132,678,000*

Rank ('89)	Company Profile	Packaging Expenditures
51 (49)	**M&M/Mars** Hackettstown, N.J. Secretive candy giant goes on marketing blitz. Revamps labels to emphasis Mars name. Launches oval paperboard canisters for M&Ms. Kal Kan pet food div. extends single-serve, metal-tray packaging to Whiskas cat food line. Kudos snacks, Dove ice cream fight for shelf space.	$130,000,000*
52 (54)	**Keebler** Elmhurst, Ill. Reports packaging expenditures at 53.4% plastic, 40.1% paperboard, 4.9% metal. Of $70 million plastic total, spends $47.2 million on plastic films, $32.4 million on laminations, $20.4 on paper-based flexibles. Continues move into salty snacks. New cookie types debut.	$129,935,000
53 (50)	**3M Co.** St. Paul, Minn. 45,000 products involve coating one material onto another. Printed Post-it notes now in 350 kinds. Big consumer products include Scotchgard protector, Scotch Magic tape, Buf-Puf facial sponges, antiseptics and medicated pads. Launches Safest Stripper paint, varnish removers.	$129,513,000*
54 (64)	**Tyson Foods** Springdale, Ark. Tough acquisition of Holly Farms' Quick-to-Fix, Henry House and Weaver divisions pushes Tyson up 10 notches. Reports spending $73.5 million on paperboard, $45.8 million on plastics, $1.2 million on metal. Packaging capital spending listed at $3 million.	$120,500,000
55 (55)	**Iowa Beef Processors** Dakota City, Neb. Despite decline in cattle supplies, IBP maintains market share. Buys about $80 million in paperboard shipping cases for boxed beef and pork products. Breaks ground for new beef-processing plant in Neb. Opens specialty plant in Iowa for further-processed pork cuts.	$120,200,000

SELECTED 1989 CAPITAL EXPENDITURES FOR PACKAGING MACHINERY & EQUIPMENT

Company	Amount
Seagram USA	$260,000,000*
Kimberly-Clark Corp.	$89,000,000*
Sara Lee Corp.	$72,000,000
ConAgra, Inc.	$56,000,000*
Mobil Oil Corp.	$45,000,000
Adolph Coors Co.	$27,045,000
Schering-Plough Corp.	$3,280,000
Tyson Foods Corp.	$3,000,000
E.I. DuPont de Nemours Co.	$2,500,000

*PACKAGING estimate

* Estimate

Rank ('89)	Company Profile	Packaging Expenditures
56 **(51)**	**Ford Motor** Dearborn, Mich. No. 2 automaker sees slight decline in U.S. sales. Bulk of packaging purchases in paperboard and plastic, mainly for work-in-process shipping containers, retail cartons for Motorcraft aftermarket products. New cars on the road: Mercury Tracer, four-door Explorer utility vehicle.	$119,875,000*
57 **(34)**	**Beatrice Foods** Chicago, Ill. Divestiture of Fisher Nut, dramatic sales decrease drop Beatrice 23 slots. More Hunt-Wesson edible-oil products move into recyclable plastic bottles. Swift-Eckrich continues microwave packaging drive for Brown 'n Serve sausage and MAP/CAP breakfast-sandwich products.	116,000,000*
58 **(57)**	**International Business Machines** Armonk, N.Y. A reversal of 1989's decline in domestic sales bumps up packaging expenditures by 6%. Success of Applications Business Systems' AS/400 Series continues. Paperboard, plastic film, cushioning purchases predominate. Emphasizes desktop-publishing products.	$113,656,000*
59 **(58)**	**Exxon** New York, N.Y. World's largest oil company's big emphasis is on chemical packaging. Most of expenditures in palletized bulk-shipping containers, metal and plastic drums for Polymers Group products—olefin resins, adhesives, polypropylenes and specialty resins for multilayer films.	$106,537,000*
60 **(53)**	**American Brands** Old Greenwich, Conn. Reports market-share gain for American Tobacco coupled with lower U.S. volume for Jim Beam spirits. Launches Malibu Ultra 100s and 3 flavor extensions for DeKuyper Schnapps nationally. Other major businesses include ACCO office products, Masterlock, Aristokraft cabinetry.	$104,500,000*
61 **(61)**	**Pfizer** New York, N.Y. Packaging-intensive health-care and consumer goods make up 75% of product volume. Popular brands include Visine Extra, Ben-Gay Warming Ice, Barbasol shave cream, Unisom sleep-aid, Coty fragrances and Desitin ointment. Strong sales growth for newly acquired Plax dental rinse.	$93,782,000*
62 **(59)**	**PPG Industries** Pittsburgh, Pa. Coatings, chemicals report strong volume sales. Acquires Olympic stains and Lucite paints. Expands capacity for car windshields, breaks ground for float-glass facility in Southeast. Packages chlorine, caustic soda, flame-retardant concentrates for industrial market.	$91,500,000
63 **(60)**	**General Electric** Fairfield, Conn. More economical sourcing results in similar packaging expenditures despite product-volume increases. Major-appliance concentration shows in purchases: about 90% paperboard, 10% plastic. New "White on White" appliance line proves popular with consumers.	$90,000,000
64 **(82)**	**Schering-Plough** Madison, N.J. Reports expenditures of $50 million for plastics, $12 million for metal, $9 million for paperboard and corrugated, $6 million for glass. Capital expenditures for packaging machinery: $3.28 million. Major expansion includes moving filling line to Puerto Rico.	$86,000,000
65 **(62)**	**Mobil Oil** New York, N.Y. Engine lubricants and films represent major packaged products. Specific purchases include paperboard, $41 million; plastic, $24.5 million; metal containers, $16.5 million. Packaging capital expenditures: $45 million. New film plant being built in Ga.	$82,000,000
66 **(66)**	**Tenneco** Houston, Texas Merges aluminum-, plastic-packaging businesses into PCA/Ekco Kaiser, builds market share in high-margin specialty products. Tenneco Automotive reports volume growth for Walker mufflers, Monroe shock absorbers. Sells oil/gas divisions. Forms Tenneco Automotive Brake business.	$81,300,000*
67 **(63)**	**Texaco** White Plains, N.Y. Slight decline in U.S. sales drops company a few notches in rank. No. 3 ranked Havoline motor oil repackaged with pull-tab, innerseal liner on plastic quart bottles. Forms Star Enterprises subsidiary for East and Gulf Coast States. Continues emphasis on specialty chemicals.	$80,100,000*
68 **(65)**	**United Brands** Cincinnati, Ohio Expenditures climb roughly 10%. Adds Chiquita brand to melons, pineapples and grapefruit. Introduces fruit-based frozen desserts, pies and Tropical Squeeze juice blend in gable-top cartons and frozen concentrate. Slight volume increases for Morrell, Rath, Tobin's meats.	$79,371,000*
69 **(—)**	**Sunkist Growers** Sherman Oaks, Calif. Buys roughly 56 million corrugated cases for fresh fruit and fruit products. Ships about 38 million cartons of oranges, 12 million of lemons, 5 million of grapefruit and 1 million of tangerines. Fresh-fruit packaging spending expected to climb 10% on fewer juice-fruit shipments.	$74,500,000*
70 **(68)**	**Land O'Lakes** Arden Hills, Minn. Growth in the cheese market, decline in the butter market combine to maintain expenditures at similar levels. Specific purchases: paperboard, $35 million; plastic, $21 million; and metal, $14 million. Capital expenditures for packaging machinery and equipment: $1 million.	$70,000,000

* Estimate

LEADING BEVERAGE PACKAGERS

Rank	**Company** (Divisions) *Products*
1	**Anheuser-Busch Companies, Inc.** *Budweiser, Bud Light, Michelob, Michelob Dry, Busch, Natural Light, Anheuser Marzen*
2	**PepsiCo, Inc.** *Pepsi-Cola, Diet Pepsi, Mountain Dew, H₂Oh!, Pepsi A.M., Mountain Dew Sport*
3	**Coca-Cola Company** (Coca-Cola USA, Coca-Cola Foods) *Minute Maid, Hi-C*
4	**Coca-Cola Enterprises, Inc.** *Coca-Cola Classic, Diet Coke, Sprite, Diet Sprite, Fresca*
5	**Philip Morris Companies, Inc.** *Miller, Lite, High Life, Genuine Draft, Lowenbrau, Leinenkugel's, Sharp's*

Rank ('89)	Company Profile	Packaging Expenditures
71 **(70)**	**Miles Laboratories** Elkhart, Ind. Ranks in top 10 U.S. marketers of OTC drugs. Alka-Seltzer Plus cold contributes 20% of brand's total sales. Holds leadership in children's vitamins with Flintstones and Bugs Bunny brands. Repositions S.O.S. soap pads with new package graphics. Emphasizes specialty cleaners.	$69,000,000*
72 **(69)**	**Monsanto** St. Louis, Mo. Packaging-intensive drugs, food and personal-care products make up 35% of overall volume. Packaging expenditures climb 7%. Sells pain-reliever, electronic-materials businesses. Sales of fat substitute Simplesse expected to take off this year.	$68,000,000*
73 **(72)**	**Gerber Products** Fremont, Mich. Junior food-sales volume rises over 15% on strength of repositioned 6-ounce containers. Multilayer plastic bottles for juice boost sales 24%. Launches single-serve cereal cups. Hankscraft Div. rolls out microwave baby-feeding dishware. Apparel Group sales rise 3%.	$65,000,000*
74 **(75)**	**Morton International** Chicago, Ill. Adds automobile airbags to specialty chemicals and salt businesses. Volumes for thermoplastic polyurethanes and ice-control products increase on strong demand. Sales for System Saver water-conditioning salts rise 15%. Introduces water-based sealants, adhesives.	$64,500,000*
75 **(74)**	**Baxter Healthcare** Deerfield, Ill Broad range of diagnostic, hospital, pharmacy and Rx drugs pushes packaging expenditures up 8%. Consolidated purchasing helps cut costs of many items. Half of purchases in paperboard, 25% in plastic. Provides wide range of private-label hospital supplies.	$61,560,000*
76 **(71)**	**Chrysler** Highland Park, Mich Sells Chrysler Technologies, Gulfstream Aerospace to renew commitment to car industry. Rolls 2-millionth minivan off line. Breaks ground for new assembly plant in Detroit. Continued strong sales for Mopar parts mean increased paperboard-container purchases.	$61,173,000*
77 **(76)**	**Merck** Rahway, N.J. Ethical-drug packager reports 18 products represent at least $2 billion in annual sales. Major new products include Losec ulcer medication and PedvaxHIB children's flu vaccine. Forms consumer healthcare group with Johnson & Johnson to better market Mylanta antacid.	$61,000,000*
78 **(—)**	**Universal Foods** Milwaukee, Wis. Major food-processing and foodservice supplier markets cheese, frozen products, flavors, colors and dehydrated foods. New products introduced since 1988 generate $55 million in sales. Plant modifications expand frozen potato capacity in Idaho, cheese production in Wash.	$60,300,000*
79 **(78)**	**Shell Oil** Houston, Texas Expenditures include plastic, $21 million; paperboard, $12 million; metal, $12 million. No major packaging-line expansions announced. Record volumes for commodity chemical products such as olefin feedstocks. Continued demand for Truck Guard motor oil for vans and RVs.	$60,000,000
80 **(84)**	**SmithKline Beecham** Philadelphia, Pa. Merges with British drug-giant Beecham Group. Aqua-Fresh toothpaste commands 12% U.S. market share. Launches line extensions of Sucrets lozenges, Tums antacid and Geritol vitamin supplement. Cough and cold remedies grow by 14% on strength of Contac and N'Ice.	$54,400,000*
81 **(—)**	**Stanley Works** New Britain, Conn. Acquires tape maker Rabone-Chesterman, Parker Group fasteners. Hardware Div. introduces Steel Plank Closet Organizer. Strong use of carded-blister packaging for hand tools. Breaks ground for 176,000 sq. ft. consumer hardware plant in Richmond, Va.	$54,250,000*
82 **(—)**	**Black & Decker** Towson, Md. Moves into Top 100 after acquiring Emhart Corp. Strengthens share in DIY market for hardware, home-improvement products. Launches steady flow of small household appliances; these sales increase 10%. Double-digit growth for power tools, faucets, home lighting.	$54,000,000*
83 **(83)**	**Alberto Culver** Melrose Park, Ill. Household and grocery products grow by 9%. Record-high volumes for Toiletries Div. also increase at 9% pace. Major gains by Bold Hold styling products, FDS deodorant, Alberto VP5 Hot Oil and Alberto VO5 shampoos/conditioners. Introduces cheese-flavor Molly McButter Sprinkles.	$52,781,000*
84 **(77)**	**Amoco** Chicago, Ill. Implements use of post-consumer HDPE to make recycled plastic containers for motor oil. Specific packaging purchases break down as 50% for plastic, 48% for paperboard, 2% for metal. Capital expenditures for packaging machinery reported at $1 million.	$50,000,000
85 **(—)**	**Riceland Foods** Stuttgart, Ark. Expands production of rice cakes, private-label breads and value-added rice products. Expenditures include paperboard, $45 million; plastics, $5 million. Capital expenditures include $1 million to expand vacuum-packed Rice Cube line in flexible film.	$50,000,000

LEADING PHARMACEUTICAL PACKAGERS

Rank	**Company** (Divisions)
1	**Bristol-Myers Squibb Co.** (Pharmaceuticals, Consumer Products, Medical Devices, Nutritionals)
2	**Johnson & Johnson** (Johnson & Johnson, McNeil Pharmaceutical, McNeil Consumer Products, Hospital Services, Ortho Pharmaceutical, Professional Group)
3	**American Home Products Corp.** (Wyeth-Ayerst, A.H. Robins Co., Sherwood Medical, Fort Dodge Laboratories, Whitehall)
4	**Eastman Kodak Co.** (Sterling Drug, Health Sciences, Clinical Products, Glenbrook Laboratories, Winthrop Pharmaceuticals, Phillips Medical Systems)

* Estimate

Rank ('89)	Company Profile	Packaging Expenditures
86 (79)	**Whirlpool** Benton Harbor, Mich. Packaging expenditures decline slightly on 6% decrease in U.S. volume of refrigerator and freezer products. Acquires Roper brand name, rolls out full line of Roper products at mid-year. Reduces packaging components for laundry-product lines by 41%, cuts costs for these by 14%.	$49,750,000*
87 (—)	**Ecolab** St. Paul, Minn. Marketer of premium cleaning and sanitizing products for hotels, foodservice and healthcare facilities develops custom-label business for Janitorial Group. Klenzade reports 10% growth for food and beverage-processing sector. Textile Care Div. reports similar volume growth.	$48,661,000*
88 (—)	**Wm. Wrigley Jr.** Chicago, Ill. Extra Sugarfree Gum becomes No. 1 brand in U.S. Rapid growth for new Winter Fresh flavor. Discontinues 7-stick package in favor of price-marked, 5-stick packaging. Candy-maker Amurol Products acquires hard-candy and mint operations of Reed Co.	$48,518,000*
89 (87)	**Olin** Stamford, Conn. Sells photographics business to Fuji, cutting Olin-Hunt packaging subsidiary volume. Expands lines with $150,000 capital expenditures on palletizers, bottling equipment. Purchases include 45.2% for plastic, 26.7% for paperboard, 26.4% for metal, 1.7% for glass.	$47,365,800
90 (92)	**Interstate Bakeries** Kansas City, Mo. Acquires Merita/Cotton Bakeries to mark first billion-dollar sales year. Reports notably higher packaging costs as result of increased volume and cost of packaging materials themselves. Moves cake production from Charlotte, N.C., to efficient Ga. plant.	$45,318,000*
91 (86)	**Abbott Laboratories** Abbott Park, Ill. Expands capacity for pediatric nutritonal products at Ross Labs in Ohio. National distribution for New Direction obesity-control products. Consumer brands gaining market share: Selsun Blue shampoos, Murine and Clear Eyes eyedrops and Faultless hot-water bottles.	$43,856,000*
92 (—)	**Thorn Apply Valley** Southfield, Mich. Acquires Tri-Miller Packing, a full-line pork processor. Divests Wayne By-Products. Launches Foodservice Sales and Military Sales Divs. Developing beef, turkey and other deli items to offset declining consumer demand for semi-boneless and boneless hams.	$43,509,000*
93 (—)	**Carter-Wallace** New York, N.Y. Divests Sea & Ski sun-care products. Modernizes plant to produce Arrid Wide Oval Solid deodorants. Consumer Products Group grows 4%. Lambert Kay reports strong demand for pet health and grooming items. Launches line of flea and tick collars packaged in clear blisters.	$41,200,000*
94 (—)	**Maytag** Newton, Iowa Introduces first Maytag refrigerator to become full-line appliance manufacturer. Launches line of Magic Chef, Admiral, Norge and private-label washers and dryers. Expenditures show major appliance business: 79% for paperboard, 16% for wood pallets, 5% for plastic.	$40,775,115
95 (98)	**Gillette** Boston, Mass. Introduces Sensor shaving system. Growing popularity for Right Guard Sport and Soft & Dri deodorants. Low-priced pens post sizable volume gains led by Paper Mate Flexigrip refillables. Stable domestic sales of Braun small appliances. Market share grows for Oral-B products.	$40,500,000*
96 (91)	**Masco** Taylor, Mich. Largest faucet maker markets Delta, Peerless, American Bath brands to remodelers and DIY markets. Merillat cabinets report 20% growth. No. 2 furniture maker leads in premium-priced wood and upholstered markets. Specialties include Baldwin Brass giftware.	$40,000,000
97 (—)	**Sun-Diamond Growers of California** Pleasanton, Calif. Diamond Walnut operates high-tech walnut-processing plant in Stockton. Sun-Maid markets 30% of Calif. raisin crop, sees demand for 24-oz. paperboard-canister package. Sunsweet Growers installs new FFS equipment and electronic weighing systems to reduce manpower.	$39,850,000*
98 (94)	**Corning Glass Works** Corning, N.Y. Consolidates Revere Ware line into consumer-housewares operations. Debuts include Visions non-stick cookware, beige Corning Ware, Thermique thermal servers, Silver Crown stemware and Serengeti sunglasses. Major expenditures: about 45% paperboard, 35% plastic.	$39,804,000*
99 (—)	**Helene Curtis Industries** Chicago, Ill. Restages low-priced Sauve hair-care products through new formulas and revamped packaging. Professional Div. markets Attractions shampoo in gallon bottles, Gel Mist in metric containers. Launches Suave antiperspirants, Salon Selectives shampoos and conditioners.	$39,750,000*
100 (90)	**Goodyear Tire & Rubber** Kalamazoo, Mich. Demand increases for specialty automotive polymers. Eagle TA radial tire proves popular with Big 3 automakers. Expands polyester-resin plant. Acquires Tenn. producer of industrial-packaging films. Paperboard and plastic account for roughly 70% of overall packaging expenditures.	$39,525,000*

* Estimate

LEADING FOOD PACKAGERS

Rank	Company (Divisions)
1	**Philip Morris Companies, Inc.** (General Foods USA, Kraft USA, Oscar Mayer Foods, Kraft General Foods Commercial Products)
2	**RJR Nabisco, Inc.** (Nabisco Brands, Planters Lifesavers)
3	**ConAgra, Inc.** (Agri-Products, Prepared Foods, ConAgra Poultry, Armour Foods, ConAgra Foodservice, Specialty Products)
4	**Sara Lee Corp.** (Sara Lee, Jimmy Dean, Hillshire Farm, Bil Mar Foods, Bryan Foods, Hygrade)
5	**Campbell Soup Co.** (Campbell USA, Grocery Group, Fresh Produce Group, Vlasic Foods, Mrs. Paul's, Pepperidge Farm, Food-service Business Unit)

100

15 Companies To Watch

A&W Brands
White Plains, N.Y.
$35,500,000*

Soft-drink concentrate maker sees growth above industry rates for stable of regional brands. A&W Root Beer up 2% in competitive market. Squirt citrus soda up 19%. Third consecutive year of double-digit growth for Vernors. Volume up 10% for Country Time Lemonade. Launches A&W Cream Coda.

Church & Dwight
Princeton, N.J.
$22,000,000*

Successfully markets Cluster-Pack of three 1-lb. boxes of Arm & Hammer Baking Soda. Introduces Pet Fresh carpet deodorizer. Dental Care toothpastes and powders enter national distribution. Unit volume for A&H Heavy Duty Detergent remains stable despite price increase due to rising packaging costs.

Emerson Electric
St. Louis, Mo.
$32,700,000*

Slight decline in consumer products—power tools, shop vacuums, garbage disposers—offset by better gains in commercial and industrial products—motors, drives, valves, compressors, electronic control systems. Acquires solenoid-maker Joucomatic to serve packaging, chemical industries.

Hasbro
Pawtucket, R.I.
$22,450,000

Largest domestic toymaker markets Milton Bradley games, Playskool juvenile products, G.I. Joe, My Little Pony and Transformers. Extensive product line requires 350 to 450 new packages created each year. Acquires Coleco outdoor furniture and ride-on toy lines, Sesame Street and Disney licenses.

International Multifoods
Minneapolis, Minn.
$24,000,000

Leading supplier to foodservice market expands packaging lines with improvements to packing and freezing operations at Riverside, Calif., plant. Reports $46.2 million in packaging equipment capital expenditures. Purchases breakdown shows 70% for paperboard, 30% for plastic.

Eli Lilly
Indianapolis, Ind.
$26,000,000*

Mergers plant-science businesses with Dow Chemical to form DowElanco. Acquires DVI, medical-device maker of coronary vascular products. Largest category of pharmaceuticals are anti-infectives Ceclor, Keflex, Vanocin and HCI. Diabetic-care products include Humulin and Iletin artifical insulins.

Mary Kay Cosmetics
Dallas, Texas
$32,838,000

Implements significant packaging redesign for all Basic Skin Care products. Automates blusher-refill assembly process. Purchases $1.1 million in packaging equipment and machinery. Reports packaging expenditures as 65.7% for plastic, 15.1% for paperboard, 13.2% for glass, 6% for metal.

Mattel
El Segundo, Calif.
$18,000,000*

Overall volume increases 25%. Mattel/Disney Infant and Preschool line markets 67 products including new Ride-On Mickey and Action Blocks. Overwhelming success for Nintendo Power Glove line extensions: Super Software and Turbo Sport Edition. Large-doll products climb to $100 million sales.

McCormick & Co.
Hunt Valley, Md.
$33,976,000*

Consolidates McCormick/Schilling operations, opens new plants for Golden West Foods and Tubed Products. Repackages entire core spice line in plastic bottles. Strong growth for popular Gourmet Spices clear glass containers. Relaunches Bag 'n Season cooking bags and seasoning blends.

Phillips Petroleum
Bartlesville, Okla.
$4,600,000

Increases capacity for K-Resin copolymer, Marlex polyethylene. Propylene volumes drop while specialty chemical volumes rise. Launches Crystalor polymethylpentene to cookware, plastic-bottle markets. Breakdown of purchases shows 60% for paperboard, 31% for plastic and 9% for metal.

Rohm and Haas
Philadehlphia, Pa.
$33,460,000

Expands lines to package Kamax acrylic resins, Paraloid HT-570 modifiers in Louisville and Plexiglas in Bristol, Pa. Spends $880,000 on capital equipment for packaging. Purchases $18.4 million worth of paperboard, $8.7 million of metal containers and $6.4 million of plastic materials.

Rubbermaid
Wooster, Ohio
$23,400,000*

Introduces new containers for consumers and municipalities to sort and collect recyclable refuse, Action Packer insulated storage bins for camping and boating, Thick Wall planters with the look of terra cotta, Bouncer series of activity bottles, 5-quart insulated lunch boxes and Little Tykes Country Cottage.

Stokely USA
Oconomowoc, Wis.
$35,555,000*

Fifteen plants package 102 vegetable and fruit items. Success continues for Stokely's Finest products in white-lined cans and microwave Stokely's Singles in ovenable paperboard. Reports $14.6 million in capital expenditures for new sauerkraut facility, conversion of can plant to frozen food.

Upjohn
Kalamazoo, Mich.
$39,452,000*

Human health business achieves 7% growth. Strong performers are ethical pharmaceuticals Micronase, Xanax and Rogaine treatment for male pattern baldness. Launches Motrin IB pain-reliever to OTC market, Progaine shampoo to users of Rogaine and Ansaid prescription medicine for arthritis.

UST
Greenwich, Conn.
$32,050,000*

Moderate volume growth of 3% for U.S. Tobacco's smokeless products—Copenhagen and Skoal. Ships 520.2 million cans. Bandits Classic chewing tobacco goes national. Stimson Lane Wines moves 31% more cases under Chateau Ste. Michelle, Columbia Crest, Conn Creek and Villa Mt. Eden labels.

* Estimate

PACKAGING®

THE CAHNERS MAGAZINE FOR DECISION-MAKERS/AUGUST 1990

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OCEAN GOURMET
Swordfish Steak
OCEAN GOURMET
Salmon Steak
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Blend

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PACKAGING NEWS

Latecomers Respond To '100' Poll

Survey points up a back-to-roots trend

Some revisions to our PACKAGING 100 story are in order.

Three companies responded to our survey questionnaire too late to be included in our July article. The companies and their total 1989 packaging expenditures: Colgate Palmolive Co., $180 million; CPC International Inc., $160 million; Pfizer Inc., $84 million.

Compare these new figures to the rankings we published last month to determine the proper place of these major end users.

Having analyzed results of our survey, we see what appears to be a growing trend among the PACKAGING 100. The past year has been a period of refinement if not retrenchment.

Just a short time ago, it seemed natural for an already-hyphenated chemical corporation to buy a foods conglomerate which itself owned a maker of table lamps. Although mergers and acquisitions continue at a fast pace among the PACKAGING 100, the rationale and results are changing.

Once in pursuit of opportunities to diversify wildly, many of the giants are now shopping for ways to return to their roots. If they do diversify, they move into product areas that seem related to their core business.

One recent, dramatic example is ConAgra Inc.'s announcement in June that it would acquire the last remaining bits of Beatrice Co. from New York buyout firm Kohlberg Kravis Roberts & Co.

As a result, Beatrice brands including Swift, Wesson and La Choy will join ConAgra brands, which include Armour, Banquet and Chun King. The $1.34 billion deal is likely to make ConAgra the nation's third-largest food company.

There's more. A leading drug company has merged—not with just anybody but with another pharmaceuticals specialist. And a cereal maker that owns a toy company wants to sell it, apparently in an effort to concentrate on, cleverly enough, cereal.

Procter & Gamble, not commonly thought of as a cosmetics company, has become one with its purchase of Noxell. Although this may seem to have nudged P&G away from its primary area of expertise, personal-care products, of which P&G markets many, are closely related in form and function to cosmetics.

See the Table for information about other cosmetics giants featured in PACKAGING's exclusive July report.

What will be the net effect of such corporate reorientation on sales of packaging materials and machinery? That remains to be seen. But with regard to people, in the short run at least, such a back-to-basics philosophy could prove refreshing. Professionals who know packaging could find themselves working more closely than in years past with others of their kind.

LEADING COSMETICS PACKAGERS

Rank	**Company** *(Divisions)* *Products*
1	**Avon Products** *(U.S. Direct Selling, Retail)* *Avon Color, BioAdvance, Skin So Soft, Giorgio, Giorgio's Red*
2	**Revlon Group** *(Cosmetics, Fragrances)* *Max Factor, Almay, Charles of the Ritz, Germain Monteil*
3	**Unilever US** *(Cheseborough-Pond's, Faberge)* *Vaseline, Pond's Aziza, Cutex, Aqua Net, Rave, Brut, Calvin Klein, Elizabeth Arden*
4	**Procter & Gamble** *(Personal Care)* *Oil of Olay, Bain de Soleil, Noxema, Cover Girl, Clarion*
5	**Alberto-Culver** *(Toiletries, Professional)* *Alberto, VO5, Bold Hold, TCB, TCB Lite, TRESemme, Consort*

Source: PACKAGING's 100 Survey, 1990

PE Giant Revises Start-up Schedule

Work on first phase to be completed in October

Phillips 66 Co. has revised its schedule for restarting polyethylene production. Start-up of the first 300 million pounds of capacity at the company's Houston Chemical Complex has been postponed until early October. Phillips officials say they still intend to have 600 million pounds of annual capacity on stream by the fourth quarter of 1990.

Original plans called for start-up of the first phase of production at the new plant in late June or early July.

According to spokespersons for the company, the revised schedule does not affect plans to fully restore the entire 1.8 billion pounds of annual PE capacity that was in place or under construction when an explosion and fire destroyed much of the complex last fall. Capacity will be built up in several phases, say Phillips officials, with the last phase coming into operation in mid-1992.

Anti-Fire Rule Raises Packaging Questions

Container-warehousing standard faces appeal

Uncertainty regarding the National Fire Protection Association's standard on the warehousing of combustible liquids is causing headaches for manufacturers, packagers and distributors of such products.

Originally set to go into effect Sept. 1, 1990, NFPA Standard 30 is being appealed by at least one industry association. The group contends that the standard could unfairly restrict the use of plastic in packaging flammable liquids such as lighter fluid and gasoline additives.

Among other things, the standard sets limits on the quantity of flammable or combustible liquids that can be stored in any one warehouse. It also restricts storage of such liquids packaged in plastic containers to specially designed warehouses or beefed-up, separate sections of general-purpose warehouses.

Robert Benedetti, NFPA flammable liquids engineer, tells PACKAGING that the standard could dampen sales of plastic bottles. "In a properly protected area of the warehouse," he says, "the issue of container material just goes away. But a distributor for the typical grocery store chain might say, 'I don't want to go to the trouble of storing these plastic containers specially, so I won't buy anything but steel cans.'"

For a detailed examination of the standard and its implications, see PACKAGING's March 1988 issue. Also, copies of NFPA Standard 30 are now available. Contact the National Fire Protection Association, One Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.

Aging Consumers Want Easy Packaging

Need for convenience grows in importance

According to PACKAGING's 1990 Consumer Survey, interest in convenient food packaging rises as consumers age.

As the age of respondents to our survey rose from under 30 to over 60, their interest in packages that were convenient to open and convenient to reseal rose significantly.

For example, only 45% of consumers under 30 years of age call "convenient to open" extremely/very important, vs. 82% of consumers over 60 years old.

This is likely to have considerable impact on packagers of foods in the future as the demographic trend called the graying of America continues.

A full report on PACKAGING's 1990 Consumer Survey appeared in our June and July issues.

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PRODUCTIVITY EQUATION

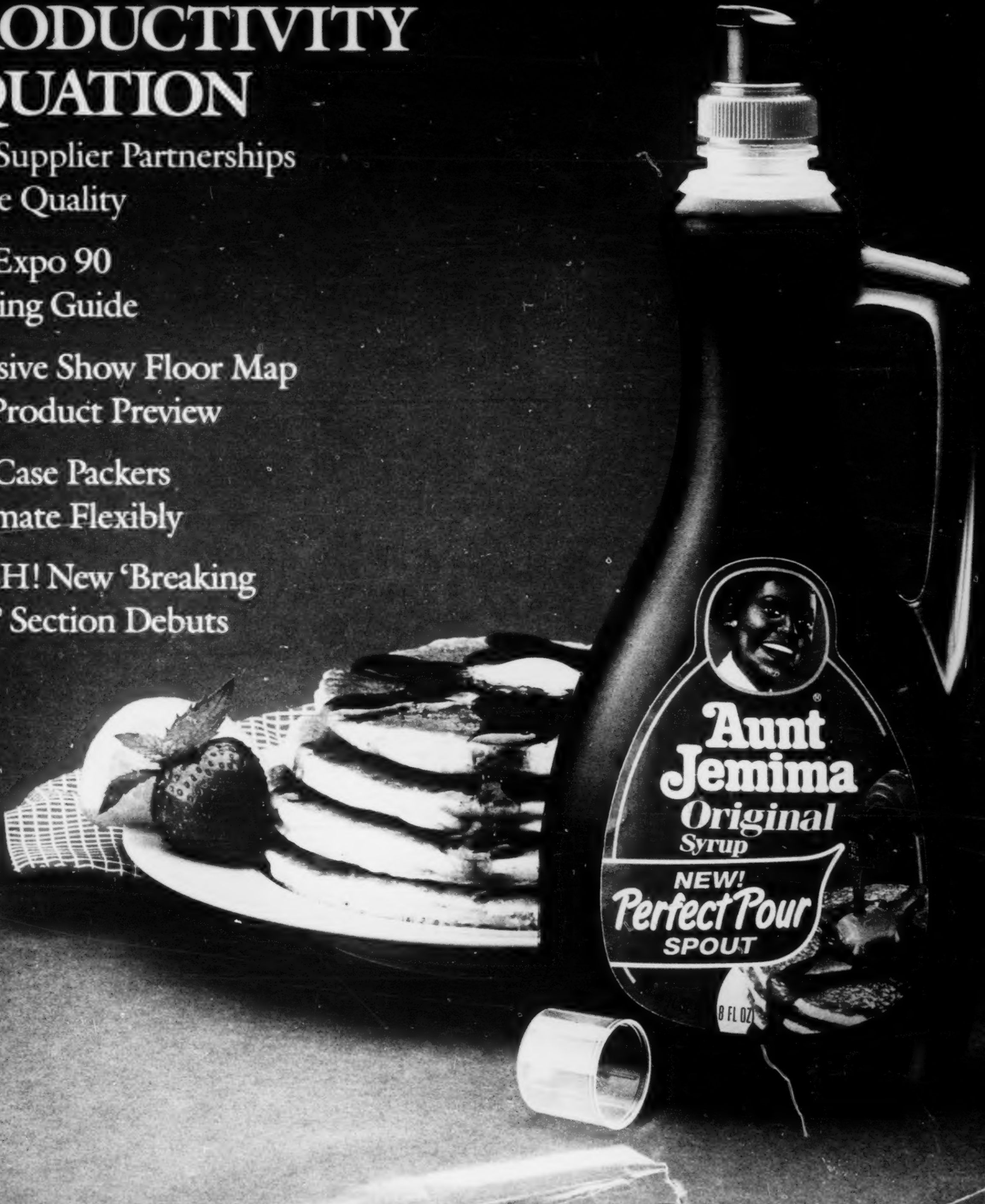
User-Supplier Partnerships Assure Quality

Pack Expo 90 Planning Guide

Exclusive Show Floor Map And Product Preview

New Case Packers Automate Flexibly

FLASH! New 'Breaking News' Section Debuts


Aunt Jemima®
Original
Syrup
NEW!
Perfect Pour
SPOUT
8 FL OZ

PACKAGING

BREAKING NEWS

New container supplier formed: Silgan Plastics is the name of a $280 million company formed from five plastics and packaging companies by R. Philip Silver, D. Greg Horrigan and Morgan Stanley. Silgan Plastics, to be headquartered at St. Louis, Mo., will maintain 16 manufacturing locations in the U.S. and Canada with 2,000 employees. Focusing on packaging, the new company includes the assets of InnoPak Plastics of St. Louis, Fortune Plastics of Richmond, Va., Aim Packaging of Port Clinton, Ohio, Express Plastics of Toronto, Canada, and Silgan P.E.T. Corp. of Atlanta.

Italian company buys Paxall: Sasib S.p.A. of Bologna, Italy, has acquired The Paxall Group, manufacturer of packaging machinery in Skokie, Ill. Sasib produces packaging and processing machinery. Heyn Kjerulf, president of Sasib Corp. of America, has been named Paxall president, an office that was vacant for the past several months.

Poll finds No. 2 waste concern: A new Roper Organization poll shows that Americans think plastic packaging is the nation's second most serious cause of consumer solid-waste problems. Commissioned by S.C. Johnson & Son, Racine, Wis., Roper polled 1,400 adults on a wide range of packaging and environmental issues, including many related to aerosols. Among the findings are these: 74% of the respondents favor mandatory recycling of bottles, cans and newspapers in their community; 69% support requiring manufacturers to sell household and personal-care products in refill form. The No. 1 consumer solid-waste problem according to the respondents is disposable diapers.

Aerosol study predicts growth: Filled aerosol demand in the U.S. will rise 4.3% per year through 1994 to 3.6 billion units according to The Freedonia Group Inc., Cleveland, Ohio. A new study from the research firm says demand for steel aerosols will rise 3.7% per year to 3.2 billion units while aluminum aerosol demand grows by 9.7% to 365 million units.

Single-serve Super Glue makes debut: Super Glue Corp. has introduced a blister-packed pouch of five one-use ampuls containing its fast-drying adhesive. According to the company, the break-apart plastic ampuls are a reponse to consumer complaints that unused glue dries in the tube and blocks the applicator tip. The new ampul is itself resealable, since a flange that breaks away to open the ampul doubles as a closure. Inside the foil-based pouch is a desiccant to keep leftover glue fresh. The blister, from Alloyd Co., is noteworthy: It's made of recycled plastic.

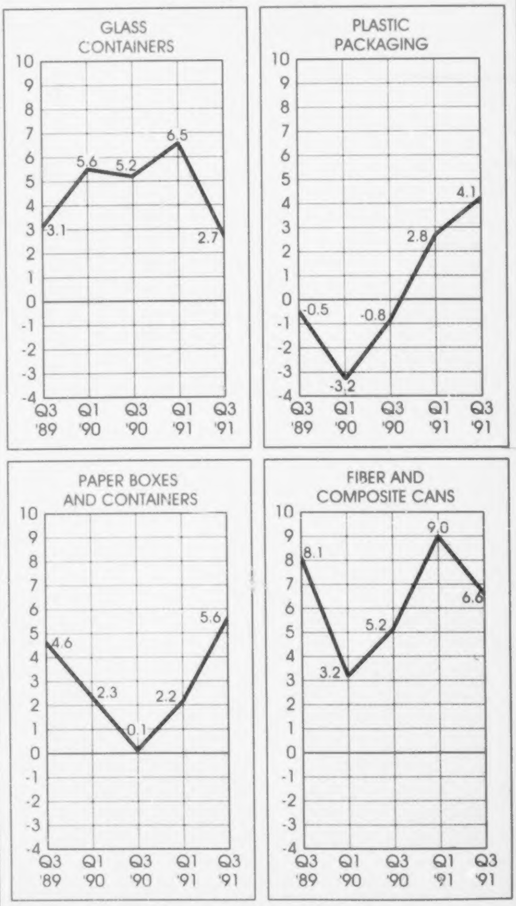
KEY PRICES TO EDGE UP

Prices of four key packaging materials and containers are headed up during the next six months, according to forecasts by Cahners Economics. Cahners expects price increases for glass containers, plastic packaging and corrugated paper products to rise moderately.

Price increases for composite cans, for which there has been very strong demand, are forecast to jump substantially.

PRODUCER PRICE INDEXES

% Change Vs. Year Ago



Data Source: Bureau of Labor Statistics   Forecast: Cahners Economics

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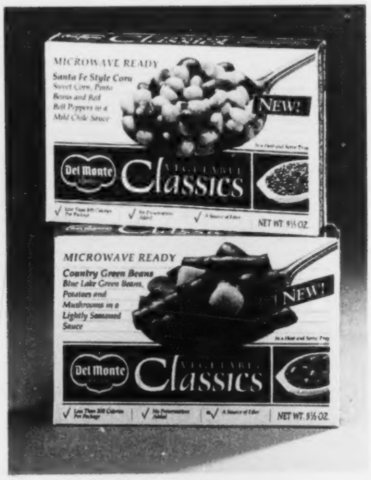
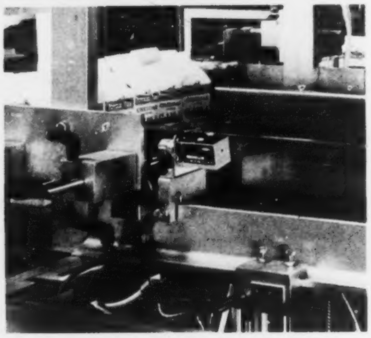
VOLUME 35 NUMBER 12


MICROWAVE READY
Santa Fe Style Corn
NEW!
Del Monte
Classics
MICROWAVE READY
Country Green Beans
NEW!
Del Monte
Classics

Teamwork between users and suppliers is crucial to the quality-control effort. Page **26**



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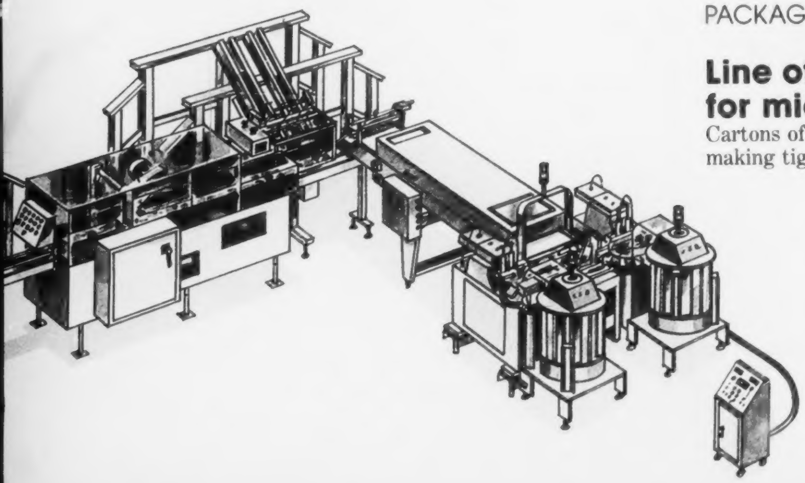

Use of electronics creates new line that meets goals without exceeding realistic level of technology. Page **52**

On the cover:
New spouted closure from Creative Packaging tops Aunt Jemima Original Syrup with increased consumer convenience. Page **14**

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Aunt Jemima syrup's less-messy closure to go national

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Coke, Pepsi plan national use in Holland and Germany

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Consumers return bottles to recycling centers for cash

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Bold colors on bilingual label draw attention in Canada and U.S.

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UNSCENTED
TOTAL CONTROL
Dep
SUPER HOLD
STYLING SPRAY
NET WT. 7 OZ. 198g

Full-body shrink labels cut redecoration costs for filled aerosol cans. Page **15**

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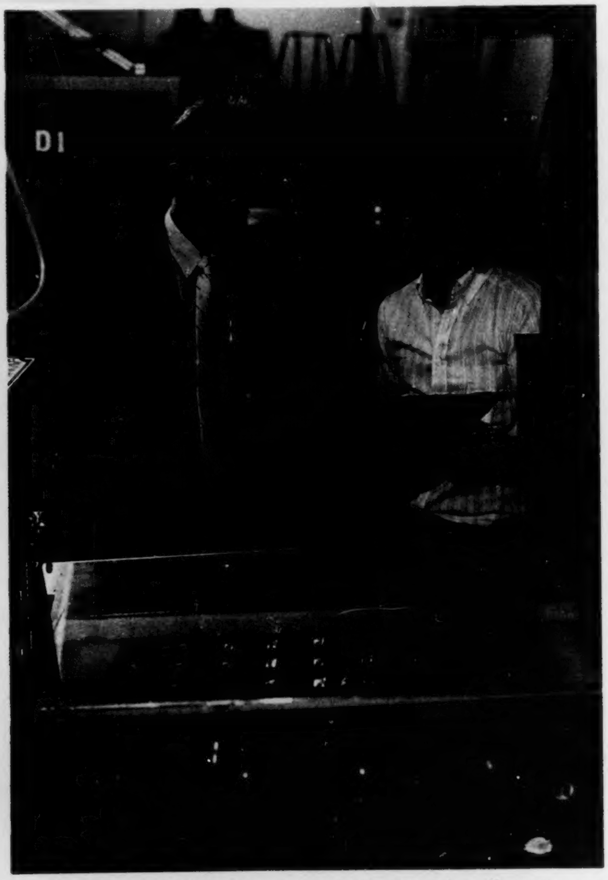
Formula For **Quality:** User-Supplier Teamwork

Productivity and quality jump when packagers let trusted suppliers share in the QC effort. Here's how they make these crucial partnerships work



Conferring on quality: Inspecting sealed roach bait arrays are (left to right): Richard Baradic, S.C. Johnson's insect control custom manufacturing manager, Roger Babler, Placon's production supervisor, and Jim Vaughan, process improvement monitor at Placon.

By Melissa Larson
Senior Editor

New relationships are being forged between packagers and their trusted suppliers. The best partnerships are yielding improvements in quality and operating efficiency that previously seemed unattainable.

Not too long ago, packagers looked upon a supplier as a necessary evil—someone who could sell them what they wanted, but who just might, they feared, tell a competitor their secrets. Suppliers were not trusted with proprietary plans for the future or information about new products and lines.

In some cases, suppliers delivering goods were not even shown the packaging line where their machinery or materials would be used.

In turn, some packaging suppliers viewed their customers only in terms of the dollar amount of their orders. They weren't interested in customizing products to fit a particular need or in finding out more about a customer's business so they could help him grow.

Some of those packagers and suppliers are now out of business. The survivors have learned some tough lessons about working together to succeed in today's highly competitive market.

Certified vendor or preferred supplier arrangements entail risk and hard work on both sides. For packagers, instituting such a program involves sharing with suppliers detailed information about the company's processes and products. Some organizations simply aren't comfortable with this philosophy.

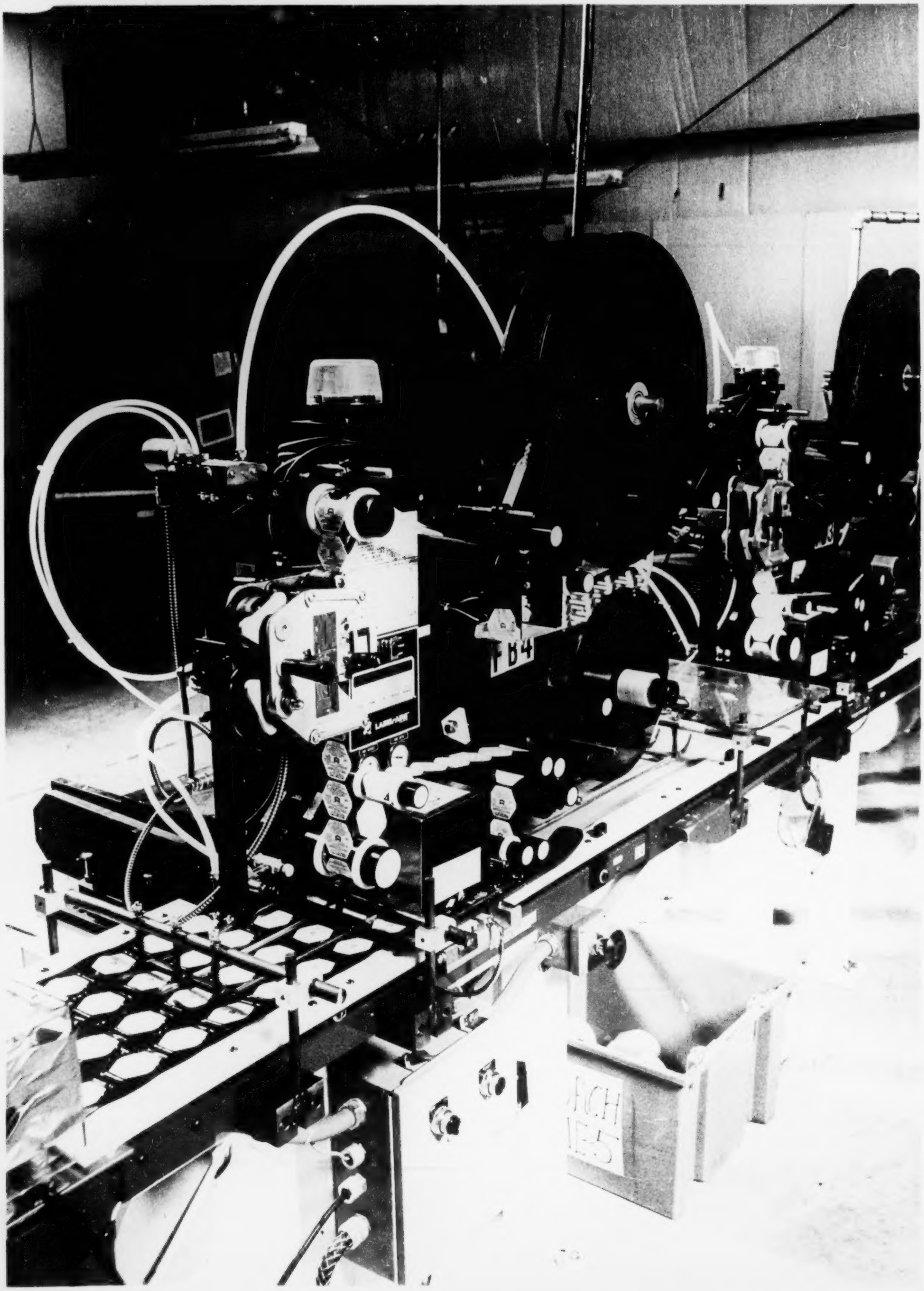
A permanent project

For suppliers, certification is difficult—sometimes even impossible. It often means initiating or updating statistical process control programs. It means a commitment to continually improve products and processes. Even after certification has been granted, periodic visits and yearly reviews keep the pressure on. To that extent, it's a permanent ongoing project.

Yet the drive for world-class manufacturing and competitive pressures both here and abroad have more U.S. companies scrambling to establish these programs.

Packaging for S.C. Johnson Wax' line of ant and

Four-across labelers keep up with production. Placon made a hefty investment in equipment for the insect bait line.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Advice from packagers who've been there: certified vendor programs require patience

roach baits, including the new Raid Max brand, requires PVC thermoforming and die-cutting, plus sealing technologies that lay outside the expertise of the Racine, Wis. manufacturer of household products.

Within six months of signing an agreement with S.C. Johnson Wax in 1984, thermoformer and contract packager Placon in nearby Madison had built a 30,000-square foot facility and installed machinery to assemble and package roach baits on its own premises.

"Placon functions as an extension of SCJ's process," explains Joan McNulty, Placon's director of marketing and product development. "We've geared ourselves toward solving their problems."

Placon forms the bait pellets, thermoforms the black PVC parts which become a multiple-bait array, and seals the bait pellets into individual hexagonal disks.

Each disk in the array then receives a pressure-sensitive label hot-stamped with a batch code. A punch press separates the disks into groups of six. Polybagging each set of six, and then inserting them into a distinctive silver Raid Max carton, takes place in a different area of the same facility. The case-packed product is then shipped to an S.C. Johnson Wax distribution center.

Joint monthly meetings involving key personnel of both companies take place at Placon headquarters. Materials, production and quality issues are discussed. This way, potential problems are headed off before they can cause trouble, according to McNulty.

Placon personnel also make frequent trips to SCJ's Racine headquarters.

The end result? S.C. Johnson Wax has substantially reduced incoming inspection of the roach bait packages and the labor and expense involved. Placon recently received SCJ's Quality Supplier Award—the first ever awarded by SCJ to a contract packager.

Outlining specs

Some packagers even enlist suppliers' help in establishing specifications. Chicago-based Soft Sheen Products Inc. is in the process of increasing the emphasis placed on quality packaging materials for its line of hair-care products.

Currently, the company's in-house quality-assurance group spends significant time and labor inspecting and testing incoming plastic packaging materials. That will change.

"We took a hard look at our present quality-control process and discovered that with our suppliers' help, we could increase our efficiency and accuracy," says Blandon Dwyer, Soft Sheen's purchasing manager.

The joint efforts of Soft Sheen and container supplier Berlin Packaging are now focused on completion of a manual, which will outline specifications for packaging components used by Soft Sheen.

Berlin's responsiveness to Soft Sheen's needs in a variety of areas led the hair-care company to confer "primary packaging supplier" status on the Chicago supplier of containers and closures.

"We realized that we were turning to Berlin more frequently for rush orders," says

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Technology partnership: Del Monte's development of shelf-stable, microwavable Vegetable Classics required close cooperation with tray, lidding and machinery vendors.

STARTING A CERTIFIED VENDOR PROGRAM

We asked some of the packagers involved in this article what guidelines they had for companies thinking of instituting a certified vendor program. Here are their compiled comments:

Organize internally: Establish an internal quality control group, familiar with SPC techniques and with your company's operations, which will spearhead the effort and perform most of the post-certification monitoring. It is vital that these staffers be familiar with SPC procedures.

Clue your vendors in: Many packagers recommend "vendor days," when all vendors are invited to tour the facility and listen to presentations from production, engineering and quality control staff.

Acquaint all suppliers with the speed of your packaging line and the interplay of the various material and machinery components. Show what happens when quality lapses occur. If you're planning to announce a new vendor-certification program, now is a good time.

Learn from them: Don't be too proud to learn something from a vendor. They can offer beneficial insights into your operation.

Have patience: Taking a certified vendor program from concept to reality, where you are actually able to certify some vendors, may take up to three years. Stay the course.

Be a good partner: A successful partnership requires open communication from your company. If a vendor is having trouble meeting a spec, find out why, and work with him to correct the problem if possible.

Dwyer. "It became apparent that working with them as a primary supplier could help reduce some of the difficulties we were experiencing."

A joint investigation of Soft Sheen's procurement and inventory process for plastic packaging led to the implementation of inventory management and just-in-time delivery programs. These reduced overall materials and operating costs.

Even ordering has been streamlined: A multiple-part order form has been replaced by a one-page faxable document.

Something altogether new

American National Can and Mahaffey & Harder were more than suppliers to Del Monte Foods USA when the food giant first conceived a line of shelf-stable, value-added microwavable vegetables: They were full partners. "The development of Vegetable Classics required an extremely close partnership with these companies—in effect, joint development," says Tom Koneval, Del Monte packaging development group leader.

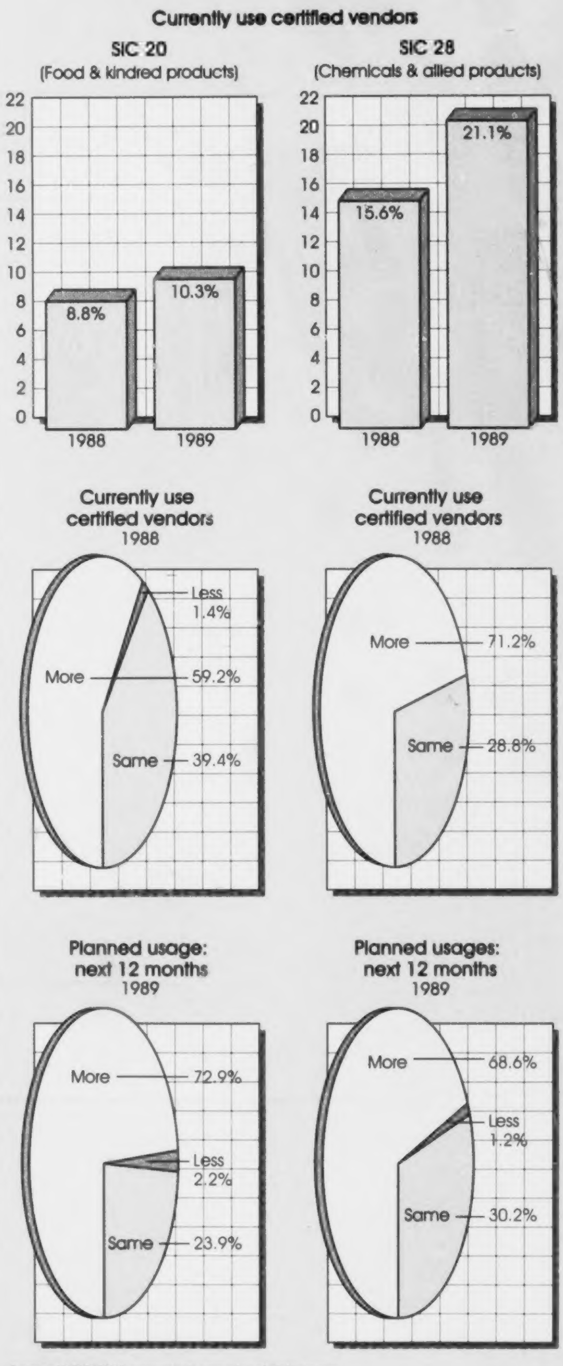
Since the product and package were both new, Del Monte and its suppliers/partners were charting new territory together—with no technology precedents.

"Our number one priority was seal integrity of the lidstock to the tray," says Koneval. "With American National Can, which initially supplied both the lidstock and the tray, we developed a series of specs governing the level of oxygen barrier, the materials' performance under a 260° retort, drop and burst tests for seal integrity and lid-stock peelability."

American National Can remains the sole supplier for Vegetable Classics' plastic lidstock while sharing tray-supplier status with Rampart Packaging.

Both Del Monte and American National Can have worked closely with tray-sealer supplier Mahaffey & Harder.

CERTIFIED VENDOR PROGRAMS PROLIFERATE



Source: PACKAGING magazine's annual materials surveys

Certified vendor programs, already well entrenched in the drug industry, are increasingly popular among food packagers.

"ANC provided drawings and tray samples to Mahaffey & Harder as they were developed. Later, various lidstock samples were sent to them for formability, sealability and line speed effects," says Konevel.

Bagging a customer

Eastman Kodak's "Quality First"(Q1) program is regarded as one of the most advanced and comprehensive quality-control programs in the nation. Introduced in 1982, the program has enrolled more than 100 Kodak suppliers to date.

All major commodities, including packaging, chemicals and capital equipment are subject to this program.

Yet, as large and comprehensive as Q1 is, each supplier relationship depends on one-on-one cooperation and communication. In the case of Kodak's eight-year relationship with multiwall bag supplier Graphic Packaging Corp., cooperation and mutual education have been hallmarks.

So has success. Graphic Packaging Corp. recently received a coveted Q1 Gold Award for the sixth year in a row. Concurrently, Kodak's defect rate for the particular type of multiwall photographic bag supplied solely by GPC has dropped from approximately 10,000 defects per million bags to a near-zero level for several years.

Kodak no longer performs routine inspection or keeps backup inventories of the bags. Instead, Kodak relies on as-needed access to GPC's computerized statistical process control records.

The polyethylene-lined kraft bag is used to ship rolls of unexposed photographic print paper to processing labs worldwide. The bags, in 45 different sizes to accommodate various paper sizes, must be light-tight and

Regular meetings involving all aspects of the program can prevent problems later on

strong enough to be shipped by common carrier. The unexposed paper is removed in darkrooms and loaded into printers.

Although certainly not glamorous, these bags are crucial, protecting not only the photographic paper on its way to labs, but also Kodak's reputation for quality. GPC's understanding of this was a key step.

"Open communication channels are an important part of the Quality First program with our vendors," explains James Schirmer, unit director of supplier quality in Kodak's materials management division.

"We work to give our suppliers a better understanding of our performance expectations, and the expectations our ultimate customers have for their product," he continues. "GPC bag-making operators visited Kodak as well as a photofinishing lab so they could see how the packaged product was utilized by our lab customers."

Early on, GPC personnel were even able to suggest improvements in the bag.

Kodak had experienced some pinholing when bag bottoms jammed in the folding machine during converting. GPC suggested turning the bags 180 degrees and using a different bottom fold pattern. This eliminated the problem almost completely.

Real-world SPC

The key to GPC's ability to attain such a high level of product quality for Kodak is the company's use of statistical process control, or SPC. Very simply, SPC involves gathering process data with computers and other electronic devices and analyzing these data to continually improve a manufacturing process. GPC has employed SPC for more than seven years.

"By controlling our process with SPC, we have gained an understanding of our process capability and have reduced our process variations," says Floyd Foster, GPC's manager of quality assurance.

Progress meetings head off problems. Here, S.C. Johnson and Placon personnel discuss quality control and production issues related to the roach bait line.

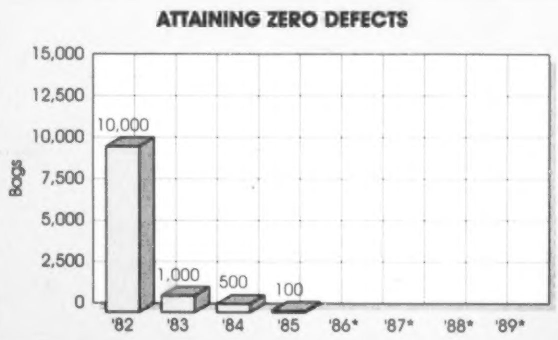
While the multiwall bags are converted at GPC, measurements are taken by an operator and electronically recorded into computerized data collectors. Control charts are displayed on monitors near the bag-making machines for real-time analysis and process control by both operators and supervisors.

For instance, bag dimensions are monitored and averaged in the computer, which displays any deviation from predetermined specs.

Off-line, collected SPC data is analyzed to determine the causes for any variation. This process yields the opportunity for continuous process improvement. In the early months of GPC's relationship with Kodak, SPC reports were routinely sent to Kodak headquarters. Now, GPC retains the data for Kodak.

Foster notes that the award-winning relationship with Kodak has yielded benefits, both material and intangible, for GPC.

"It's important to note that the [quality] award is presented by Kodak to our employees," he explains. "Each employee is presented an individual award for his or her accomplishments. This individual employee recognition has created a tremendous amount of employee pride in workmanship."



*Approaching Zero

Source: Graphic Packaging Corp.

Kodak's long-term supplier relationship with Graphic Packaging has reaped substantial quality benefits, as this chart illustrates.

Beyond buzzwords

There's no denying that closer relationships between customers and suppliers, also called partnering, is a growing business trend of the 1990s.

In fact, the vendor certification trend seems to be expanding as packaging suppliers institute similar quality programs with *their* raw-material suppliers.

In today's cutthroat markets, there is an increasing realization thatIt just makes good business sense for the supplier to see how the product is used, and for the customer to understand the supplier's process.

American packagers need the cooperation of their suppliers to stay competitive. Packaging suppliers need long-term relationships with their customers to stay in business. ■

Editor's note: For another perspective on establishing or maintaining good relationships with packaging suppliers, see "The Art of Introducing New Technologies" in this issue.

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MELISSA LARSON

Senior Editor

"Long-term relationships that benefit both user and supplier are the goal of vendor certification. Efficiency and productivity boosts are gratifying, but sometimes the effect of simply letting in new ideas from outside the organization can yield surprising fringe benefits for the packager."

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